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MUDD'S PATENT FIVE-CRANK ENGINES.*

From the Engineers' Gazette, Sunderland, Eng.

Nearly a year ago reference was made in our columns to an article on "The Search after Economy of Fuel in Marine Machinery," by Mr. Thomas Mudd, M. I. N. A., which appeared in a contemporary, and in which the author stated that without abandoning the use of the ordinary multitubular marine boiler, it was proposed to use a pressure of steam of about 260 pounds, with an engine of five cranks, and that by these means, along with others not then disclosed, it was anticipated that the expenditure of fuel would be reduced to a "quantity not far away from the much-coveted one horse-power for one pound of coal consumed per hour." Now, this object has been accomplished, and we have pleasure in illustrating the first of Mudd's patent five-crank engines. The engines have been fitted on board the screw steamer *Inchmona*, a vessel built by Messrs. Wm. Gray & Co., Limited, West Hartlepool, to the order of Messrs. Hamton, Fraser & Co., of Liverpool. The *Inchmona* is of the shallow draft type of deadweight carrier, of which, Messrs. Wm. Gray & Co., Limited, have built a large number recently. The principal dimensions are as follows: Length p. p., 335 feet; breadth extreme, 46 feet 6 inches; draft of water, 20 feet 6 inches, at which a deadweight of 5,000 tons is carried.

Mudd's patent engines are of the four-stage compound principle, with two low-pressure cylinders. The engines of the *Inchmona* are of the following sizes: High-pressure cylinder, 17 inches diameter; intermediate high, 24 inches; intermediate low, 34 inches, and the two low-pressure cylinders, 42 inches diameter, the length of stroke being 42 inches. The cylinders are all in a straight line on the centre line of the ship, and all the valves are on the same line, immediately over the crank shaft, and driven by the ordinary link-motion type of valve gear. The crank shaft is in five equal and interchangeable sections, each made on the "built" principle, the several parts being of the finest ingot steel. The five cranks are set at equal angles around the crank circle, so that the propeller receives no less than ten impulses per revolution, and the angles being equal, the impulses are delivered at equal and regular intervals of time, so obviating vibration and ensuring almost noiseless motion. The work on the valve gear is unusually light owing to the smallness of the valves, and the power passing through each crank being only one-fifth of the total instead of one-third as in the three-crank engine. The smallness of the low-pressure cylinders enables the centers of the engines to be closer than usual, and the engines altogether go into an engine-room only one frame space longer than is usual with the three-crank engine.

The feed pumps are of the well-known Weir's make. A water meter, made by Mr. W. Kennedy, Jr., of Kilmarnock, forms part of the engine-room equipment.

*THE RECORD has published, in two previous issues, short articles descriptive of these engines, nearly all of which is repeated in the above extract from an English exchange, the repetition being justified by the importance of the subject and in connection with the illustration.

The feed-water filters are Mr. Edmiston's patent, and there is a Mudd's evaporator. All the piston rods and spindles are packed with the metallic packing manufactured at the Central Engine Works, and the engine-room telegraph is of a special type, manufactured by Messrs. Mehan & Sons, of Glasgow, and known as the "Triple Automatic," the special feature of which is that there is a third pointer actuated by the engine, so that it is impossible for the engineer to deceive himself as to whether he is setting the engines away in the right direction or the reverse.

The boilers, two in number, single ended, 11 feet in diameter, 10 feet 6 inches long, fitted with "Purves" patent furnaces, are of the ordinary multitubular type, of 255 lbs. per inch working pressure, tested to 510 lbs., to the satisfaction of Lloyd's Register. They are also fitted with Ellis & Eaves' well-known system of induced draught, supplied by Messrs. John Brown & Co., Limited, of Sheffield, and also with their Serve tubes, which

ult.), during which time the boilers and all steam joints remained absolutely steam-tight, and the engines ran in the most satisfactory manner possible. No bearing of any kind showed the slightest sign of warming, and although the engines were run for many hours at 80 revolutions per minute, no difficulty of any kind arose, and at the conclusion of the trials the vessel proceeded on her first voyage up the Baltic. The coal used during the trials was carefully weighed for four separate runs in the presence of four separate groups of visitors, who were taken off to the vessel by tug, the result being of a character to entirely justify the predictions of the builders. On the first run the consumption was 1.142 lbs. of coal per horse per hour; on the second run, 1.078 lbs.; on the third run, .999 lbs.; on the fourth run, 1.069 lbs. The average of these is 1.07 lbs. of north country coal per horse per hour, which will be recognized by all interested in the question of fuel economy at sea, as a very remarkable result.

OBITUARY.

CAPT. ROWLAND H. LONG.

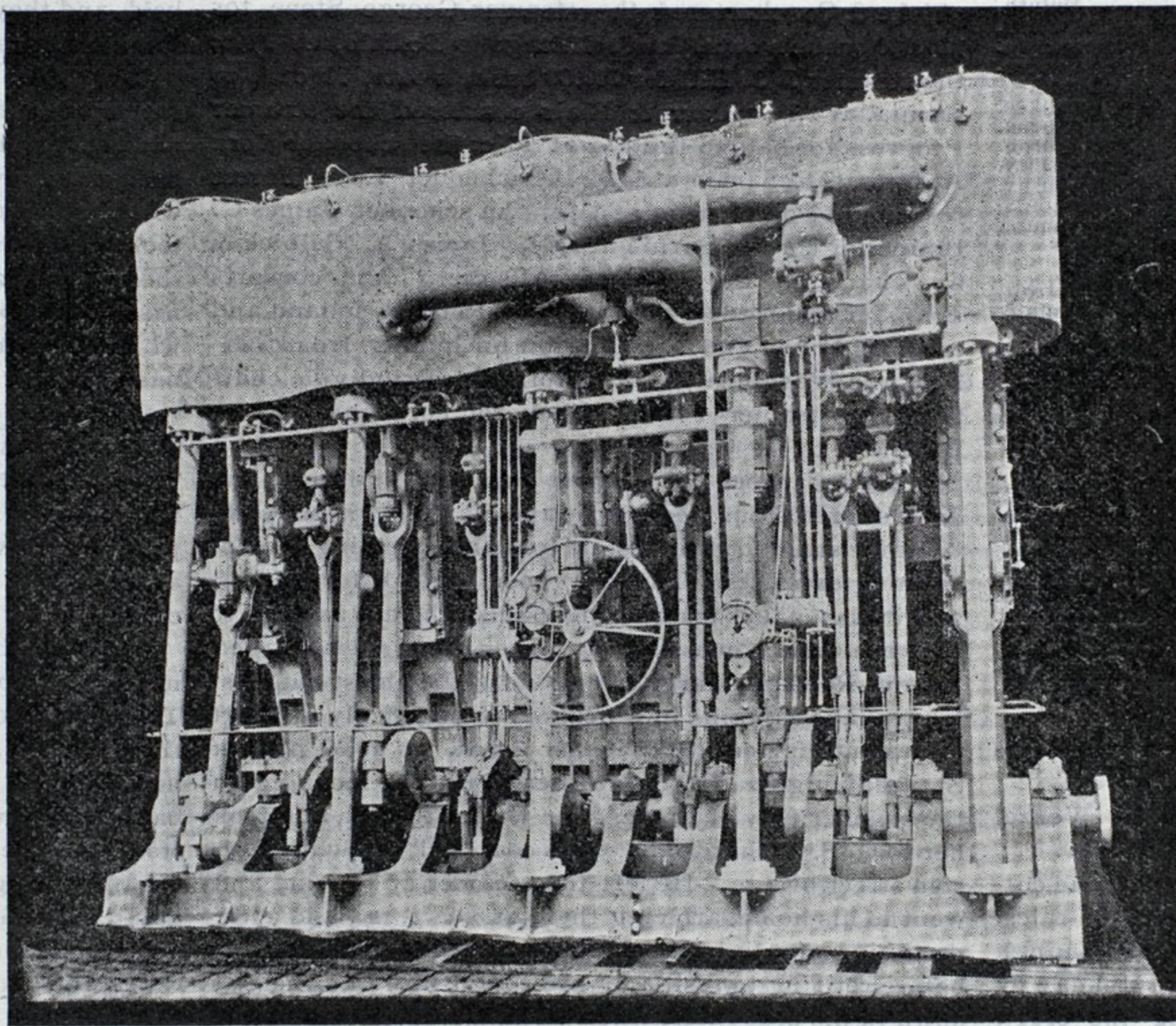
Capt. Rowland H. Long, one of the best known of lake shipmasters, died suddenly at his home, 204 Seventy-Fourth street, Windsor Park, Chicago, at 10 o'clock Saturday night. Up to a minute before his death, Capt. Long appeared in good health, and was seated in a chair, smoking. So suddenly did he go that life was extinct before the fire on the cigar had gone out.

Capt. Long commanded the steamer *City of Rome*, and had just arrived in port at noon Saturday. He took his steamer to her dock and after starting the work of unloading, went to his home. He leaves a widow, and a daughter, Lottie.

Having always followed the sea for a living, Capt. Long died in the harness. He was born in East Blue Hill, Maine, June 20, 1840. He shipped on salt water vessels early in his life, but left the sea to come to Chicago in 1866. His first command on the lakes was the schooner *Mary Collins*. Then he sailed the *Zack Chandler*, leaving her went into the big schooner *J. W. Doane*, one of the crack vessels when schooners did the business of the lakes. The *Doane* was lost on Buffalo piers, and the schooner *George* was Capt. Long's next command. He took command of the steamer *Wiley M. Egan* in the middle of the season of 1887, having started the year in her as first mate. In the spring of 1888 he brought out the steamer *John Plankinton*, and sailed her two seasons. He left her for the *City of Rome* and has spent seven seasons in her.

The funeral took place Wednesday from his late home, and the interment was at Oakwoods Cemetery. Captain Long was a member of Niagara Lodge, No. 375, A. F. & A. M., of Lockport, N. Y.; Corinthian Chapter No. 69, R. A. M., Chicago; St. Bernard Commandery, No. 35, Knight Templars, Chicago; and of the Mystic Shrine. The funeral services were under the direction of St. Bernard Commandery.

The life-saving station on Plum Island will be fully equipped and in running order by July 1.



MUDD'S PATENT FIVE-CRANK MARINE ENGINES.

have the effect of increasing the heating surface without increasing the size of the boiler. On the trials steam was easily maintained at 255 lbs. pressure while the engines were running steadily at about 80 revolutions per minute, with the induced draught fans running at as easy a speed as 180 to 200 revolutions per minute. Combined with the induced draught system there is also an arrangement of tubular superheaters, manufactured at the Central Engine Works, for drying and slightly superheating the steam on its way to the engines. The steam is further kept in a dryer state than usual throughout its progress through the engines by an exceptionally complete system of steam jacketing, and the feed water is returned to the boilers at a much higher temperature than ordinarily, namely, at about 400° Fahr., by a system of feed heaters that have been made at the Central Engine Works.

The trials were continued over two days (5th and 6th

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FLOTSAM AND JETSAM.

The Kate Hinchman has not yet been fitted out this season.

The tug Fritz Karste has been purchased by Wenzel Tesser and Steven Elliott, of Two Rivers, for \$700.

Several boats have been reported by the revenue cutter Johnson for violation of the river navigation rules.

The propeller Sanilac, owned by Robert J. Hannan and Wm. F. Hand, was libeled at Bay City Monday by Capt. Jas. Davidson for \$1,580 for rebuilding the craft.

The name of the steamer Pillsbury, of the Bessemer Steamship Co., has been changed to Henry Cort, and that of barge 103 has been changed to John Scott Russell.

In order to stop carrying away his lightship, the keeper at Port Huron has bolted a sharp scythe to the forward side of the stake in such a way that tow lines striking it will be severed.

Delaney & Mullen, contractors for the Michigan street bridge at Buffalo, deny that they have let the work go to their bondsmen. They state that Mr. Gates, a member of the former firm, has bought out the interest of the other two, taking the bridge contract for himself.

Capt. Gunderson, of Buffalo, is visiting various ports on Green Bay and Lake Michigan in quest of six powerful tugs which he desires to purchase for parties at the foot of Lake Erie. He has an option on the Menominee tug Golden at a purchase price of \$8,000. It would seem as if all the good tugs owned in these waters would be absorbed by lower lake parties.—Sturgeon Bay Advocate.

NEWS AROUND THE LAKES.

CHICAGO.

OWNERS AND MASTERS OF THE LAKE MICHIGAN LUMBER FLEET FEEL DISCOURAGED—CHRISTOPHER COLUMBUS IN COMMISSION.

OFFICE OF THE MARINE RECORD. }
CHICAGO, June 16. }

J. L. Higgle, Jr., receiver for the Vessel Owners' Towing Co., sold the tug A. G. Van Schaick to the Leyden & Drew Dredging Co. for \$4,500 cash. The Van Schaick, with engine 22 x 22, was formerly known as one of the most powerful tugs in Chicago River. Nine more of the late V. O. T. Co.'s tugs are advertised for sale in THE RECORD and can be purchased at very reasonable prices.

The whaleback steamer Christopher Columbus will arrive here from Lake Superior on Wednesday. Thursday morning a free excursion will be given by the owners of the Columbus to the newsboys of Chicago, who will be accompanied by a number of prominent clergymen and friends, who will look after the welfare of the youngsters. On Thursday evening the members of the Knights of Pythias and their friends will take a trip on this splendid steamer.]

Friday morning the Christopher Columbus will start on her excursion route for the season, between Chicago and Milwaukee. Her dock will be on the northwest side of Rush street bridge.

Clarence E. Long, editor of the marine department of the Sturgeon Bay Advocate, has been visiting Chicago during the past week.

Grain freights are quoted as steady at 1½c on corn, 1¼c on oats, and 1½c on wheat to Buffalo. C. W. Elphicke & Co. chartered the steamer George Stone for 130,000 bushels oats, South Chicago to Buffalo, at 1¼c; the steamer J. J. Hill for 70,000 bushels oats, Chicago to Sarnia, at 1½c. Carr & Blair chartered the steamer Progress for oats to Buffalo at 1¼c; the schooner Cora A. for oats to Sarnia at 1¼c; the schooner Lake Forest for oats to Port Huron at 1¼c; the schooner James G. Blaine for corn to Sarnia at 1½c. James A. Calbick & Co. chartered the steamer Allegheny and consorts Transfer and Ogden and steamer Robert Holland and consorts Minch and Warmington for lumber from Ashland and Washburn at \$2. Capt. John Prindiville chartered the steamer Philip Minch for corn and oats to Buffalo p. t.

Lumber cargoes are scarce, and nine shillings, the price offered from Menominee and Manistee, is not sufficient for steam or sail vessels to make anything except running expenses. This is a poor outlook for owners, and it also makes masters of vessels, who are anxious to increase the incomes of their owners, feel discouraged.

Capt. Rowland Harry Long, one of the oldest and best known lake captains in Chicago, died suddenly of heart disease at his home in Windsor Park, at 10:30 o'clock Saturday night. He arrived here Saturday morning on the steamer City of Rome, from Erie with coal, and took her to O. S. Richardson & Co.'s coal dock at South Halsted street bridge. He left the steamer at 7 p. m. and went to his home, arriving there at 8:45 p. m., and after partaking of a light lunch he concluded to smoke a cigar before retiring to rest, and after lighting one, he sat down in his arm chair, when suddenly he fell out of the chair and his life soon ebbed out. Capt. Long was a man of sterling character and was much respected. He leaves a widow and one grown daughter, and a large circle of friends to mourn his sudden taking away. There was a large attendance of marine men and other friends at the funeral, and many flags were at half mast on vessels in Chicago River.

THOMAS WILLIAMS.

BUFFALO.

THE CAUSE OF THE ALVA'S WET CARGO STILL APPARENTLY A MYSTERY—CAPT. MIKE CARR RETURNS FROM HIS TRIP—A NEW GORDON STORY.

Special Correspondence to The Marine Record.

BUFFALO, June 16.

Business is good in spite of the rather dismal outlook. It was a trifle slow last week on account of the falling off of the grain business, but that has come back now, at least for the time, and there is a large increase in ore and lumber receipts.

Buffalo is expected to get the five boats of the Davidson

fleet that are coming down from Duluth with what is announced to be 550,000 bushels of wheat. The estimate is high, though, for they took on only about 520,000 bushels. This amount has been exceeded once by the bunching of whaleback tows, but not for a year or two.

In spite of the various efforts to get at the facts in the case of the Alva's wet corn, it now appears likely to remain a mystery. The insurance companies do not seem inclined to delve into the matter, as they appear to be convinced that they would have to pay the loss anyhow; but it looks strange that such a thing could happen and no one be able to venture a probable guess as to the way the thing was done. When a discharged watchman blew into Smith, Davis & Co.'s the other day and said he was on the boat and on duty when the accident happened it looked as though he was going to solve the mystery, but his idea that the water came in through the gangway is not accepted by the inspectors, who certainly have no reason for covering up the facts in the case.

The work of the dredges in the creek is beginning to tell. The City of Paris got aground this morning on her way to the Buffalo furnace dock, it is true, but she was drawing 16 feet 6 and besides was out of the channel a little. The dredges will not stop until there is 20 feet.

The Northern Line people are hard at work on the new docks they are to have on the Blackwell. The Pennsylvania coal trestle is coming down, and construction work will begin soon. The dock and warehouse are to be ready for use in August.

Coal shippers are not making any haste to send the r wares forward on the cheaper freights. Brokers predicted that they would not ship any more on the low rate than they would have done had the 60c rate been held, and they were right. Still the rate was higher than other rates and it had to come down.

Capt. Mike Carr has added another chapter to his rather long list of enterprises. He made his appearance at the tug offices to-day unannounced after having been away several months. Most people did not know what had become of him, but they soon recalled that he took the steam yacht Eugene Galvin, last September or thereabouts, and set out for salt water with her. He first went to Cleveland and thence to the Miami, up which he made his way to Cincinnati. Then he took business easy. Like a true rover, he kept on, but often stopped on the way and sailed the yacht for pay awhile, so that it was May when he fetched up in Houston, Tex., where he sold the boat and then of course he steered for home "for he hadn't anywhere else to stay," as he puts it. He will soon be master of some harbor boat again, where he will stay till the rover habit sends him off again.

They are after John Gordon again, and the new line must come now or somebody will know the reason why. The Globe took some freight off the Crawford salt dock the other day, and it at once went out that Mr. Gordon had leased it and was after the line, sure. But he is back from a western trip and declares that the whole story is made out of nothing.

I am teasing the Buffalo Merchants' Exchange to appoint an official statistician. It is not very likely that it will be done right away, but it is time such a demand was made and repeated at every opportunity till something is done about it. One of the Cleveland papers had something to say about inaccurate and inadequate lake statistics a few days ago, but it did not say half enough. The more a person looks into the way statistics are gathered the less confidence he has in them. Last winter one of the Buffalo papers was a million or two short of the others in its figures on flour receipts. On inquiry it was found that the reporter had estimated the packages, as they were not all of barrel size. Two or three weeks ago one of the city papers gave the coal shipments of the week at 164,000 tons, which is easily twice the actual amount, and is more than ever went out of here in a week. What are mere newspaper statistics usually worth anyhow? They merely satisfy the ignorant.

Capt. Killoran has had a long stay in Duluth, looking after the repairs of the Moran, which came out Monday after nearly six weeks of detention. If there is to be a lawsuit on top of this the actual loss from the collision will be heavy.

The police yacht Gov. Morton has been supplied with a high-power search light. Its rays fill a circle 100 feet in diameter, and clearly expose objects over a mile dis-

tant. It is invaluable for the good it will accomplish in stopping the depredations of river thieves.

The only repair job of account in progress here now is that of the St. Louis, which had her stern smashed by her collision with the V. H. Ketchum. The bill will be about \$4,000, and she will not be out for some time.

The depth of water in the Niagara River is improving still, with nothing done to assist it. The schooner Richard Winslow went down as far as Ferry street Monday, below all the obstructions, with a cargo of 77,000 bushels of wheat.

The excursion country to the westward has turned over to us another boat this week, the Sailor Boy, a rather trim steamer from Saginaw Bay. A dozen years ago Buffalo had not a single excursion steamer, but the entire list now exceeds a dozen.

JOHN CHAMBERLIN.

DETROIT.

WANTED, A SMALL EXCURSION STEAMER—CANADIAN LINES MAY EXTEND TO CLEVELAND—A FINE NEW STEAM YACHT.

Special Correspondence to The Marine Record.

DETROIT, June 17.

The yacht Roberta, employed to run from the city to the Palm Leaf hotel, on Des-kre-shos-ka, is proving altogether too small. She is only intended for a private pleasure yacht, and her space is mostly taken up with her cabin deck house. The proprietors of the Roberta are desirous of getting a small passenger steamer, either on charter or outright, and the route is one which should pay a neat little steamer well.

The Frank F. Kirby is now fully painted and repaired for her summer excursion season. She will now run on Sundays to Put-in-Bay.

The agent of the Northern Steamship Company here reports a large number of inquiries for passage on the North Land and North West, many more than last year.

The directors of the Great Northern Transit Company and the North Shore Navigation Company, both of Collingwood, Ont., have been considering thoroughly the advisability of taking the best boat from each of their lines and running a line from Detroit to the Sault. The Killarney Fish Co., here, which handles a great many fish from Lake Huron during the course of a season, have agreed to use their boats for their freight should they decide to run. One Windsor and Sault line now has its southern terminus in Sandusky, and finds it a means of attracting much southern travel which otherwise would probably go another route. There is no doubt that a south shore Lake Erie port is the proper and natural terminus of such a line, and there is no other port combining so many features of advantage as Cleveland. President McDonald, of the Killarney Fish Co., favors the idea of their running to Cleveland, and there is no doubt that more or less additional travel would result from such a course, especially as the boats are both new, and first-class in every respect, with all modern conveniences. This route would follow the east shore of Lake Huron, probably giving glimpses of the Georgian Bay Islands, and the small towns along the route, while for fishing and boating, to say nothing of the scenery, there is no better place in the country. The route should prove a very popular one.

The managers of the steamer Frank E. Kirby are looking forward to a very prosperous excursion and passenger season to Put-in-Bay. The opening of the Hotel Victory under new management, and greatly improved, will give a great deal more travel than for some years, and the hotel is in much better condition to bid for patronage than ever before.

C. W. Morton, late of the Board of Trade, is doing most of the chartering here, which is very little. He said a few days since: "I do not expect much before the fall. There is no grain here and consequently no charters, but I look for considerable business as soon as the summer crop is ready for shipment."

The tug Arthur Jones, owned by Edward Horn, has had a phenomenal run of work so far this season, not being able to do it as fast as is wanted. She is commanded by Captain William Fisher, who is a very steady, sober man, and is giving very satisfactory work.

The Detroit Boat Works have just finished one of the finest small yachts on fresh water. She was specially designed and built for George A. Devlin, this city.

The boat is a model of its kind, and every available inch of space has been utilized in her construction. She is fitted with ice-chest, cupboard, oil and water reservoirs, and is equipped with a complete set of tableware, with rack receptacles for the same. The engine and boiler are placed a little aft of amidships, and are of the Day & Torbensen make, being double-acting fore-and-aft compound, and oil-burning, non-explosive boiler. The engine has four inches stroke and develops a speed of 12 miles an hour. The boat is 30 feet long and 6 feet 6 inches wide. The hull is built on the double diagonal plan, with frames of white oak and planking of selected white pine. The decks and interior are of mahogany, all finished in natural wood. There is not an iron nail in the boat, all the fastenings being copper, and her trimming of polished brass, upholstered in blue corduroy. The little boat can accommodate twenty people nicely and has fully 18 feet of table room amidships. Mr. Devlin had her specially designed for use on the St. Lawrence River and Gulf, and on the Atlantic Ocean on the north and east sides of Prince Edward's Island, where he has a summer home. The water tank holds sufficient to run the yacht a month without replenishing.

Mr. Devlin will ship the yacht this week to Nova Scotia and will sail her from there to his cottage at Stanhope Beach. He has called the craft the Elinor after his daughter. It is Mr. Devlin's intention to have another and larger boat for use on the Great Lakes next year.

DULUTH AND SUPERIOR.

TWO LUCKY WHALEBACKS—CUSTOMS OFFICERS' REPORT FOR MAY—FALLING OFF IN COAL SHIPMENTS.

Special Correspondence to The Marine Record.

DULUTH, JUNE 16.

The schooner Armenia was loaded last Saturday with 100,000 bushels of wheat from Elevator D in 80 minutes. This beats all former records for fast work.

Mr. Thomas Cranage, of Bay City, who formed the Michigan Salt Association, and who is also an extensive lumber man and vessel owner, visited the head of the lakes late last week.

The fact that the barges 131 and 134 were practically uninjured by going ashore is another great point in favor of the whalebacks. Capt. Alex. McDougall says they had made a good start to go into the woods, being almost high when he went to release them.

Coal receipts at the head of the lakes were very large during the first eighteen days of June, Duluth receiving about 36,000 and Superior about 31,000 tons. Since that time there has been a marked decrease in the amount of soft coal which is coming. This is due to the coal rate which has been made by roads east of Chicago. The rate from the Ohio mines to Chicago has been cut to \$1.50 a ton, a drop of 25 cents. The same roads that made this cut refuse, however, to cut the rate from the mines to the lake ports.

The report of the custom house officers for the district of Superior in the month of May showed domestic exports of \$543,535, and imports amounting to \$53,662. Goods to the value of \$29,547 came into the district under consular seals. Twenty thousand dollars' worth of goods came into the district for immediate transportation without appraisal. The number of American vessels arriving at ports in the district was 1,171, and the number clearing was 1,156. Foreign entries numbered 149, and clearances 152.

Capt. F. D. Herriman, of the Bureau Veritas, Chicago, was here this week to inspect the Gilbert while she was in dry-dock. Mr. Joseph R. Oldham, representing the British Lloyds, was here to inspect the Moran, before she departed down the lakes.

The local production of flour held steady last week at 50,205 barrels. Shipments, however, were 17,000 barrels larger than the production, being 33,375 barrels for export, and 33,925 barrels for domestic consumption, making a total of 67,300 barrels.

The Minnesota Iron Co. announces that it will pay, on July 15, its second quarterly dividend for the year, of 1½ per cent.

Wheat in store here is apportioned among the various terminal elevator lines as follows: Belt line, 956,010 bu.; Consolidated, 1,778,253; Globe, 3,208,686; Great Northern, 762,858; Superior Terminal, 1,553,143; Consolidated B, 110,504; Consolidated H, 44,152. Aggregate, 8,412,806. In store at Minneapolis, 17,049,638.

CLEVELAND.

CONVENTION OF BOILER MAKERS ADJOURNS—GOOD EXCURSION BUSINESS—LOCAL GOSSIP.

Special Correspondence to The Marine Record.

CLEVELAND, JUNE 18.

The Boilermakers' and Iron Shipbuilders' convention, which has continued over a week in this city, ended Tuesday at noon. It was determined to establish a district lodge for the cities along the lakes. This district lodge will endeavor to fix a uniform scale of wages for all men who work on the same class of work along the lakes. At present different cities are governed by different scales, but the union will carry out all present contracts before enforcing a change. Lee Johnson was re-elected grand president; E. S. Gilthorpe, grand secretary and treasurer; Chas. Carr, first vice-president; F. H. Schiller, grand organizer; Chas. P. Patrick, deputy organizer.

A body washed ashore east of Lorain was thought to be that of Captain Peterson, of Cleveland, master of the schooner Nellie Duff, lost last fall. Mr. Peterson went to Lorain but failed to identify the body.

The friends of Mrs. John McGinness, of the Globe shipyard, will be interested to know that he is the happy father of a fine boy, some three weeks old.

Mr. H. R. Rogers, late General Freight Agent of the C. & B. Line, is now snugly ensconced in his new office at No. 222 Bank street, where he has assumed his new position as contracting freight agent of the Cleveland Terminal & Valley Railroad, really the Baltimore & Ohio.

Capt. C. E. Benham is circulating a neat card of sailing distances which bears his advertisement as adjuster and vessel agent.

Mr. E. H. Smith, who was with Capt. Alex. McDougall when he operated the fleet of whalebacks on the lakes, and who entered the employ of Pickands, Mather & Co., when they were given charge of the whalebacks, has resigned his position with Pickands, Mather & Co., to assist Mr. Bowers in the management of vessels of the Bessemer Steamship Co.

The City of the Straits is once again in commission, and is running regularly on the Toledo and Put-in-Bay routes. She is as bright and fresh-looking as a fresh-blown rose. The familiar faces of Capt. Duncan McLachlan and Engineer Middleton are once again seen about the docks.

The management of the Euclid Beach Park Co. are running their boats—Duluth and Superior—about every hour, and are doing an excellent business at their popular resort. Euclid Beach has a finished appearance which makes it almost impossible for a visitor to believe it has been in operation only a short year. The dancing and amusement pavilion, the dining hall and bath house, the crystal maze, are all substantial and attractive buildings, and nothing in the way of popular family diversions has been omitted. There is neither ice-boating nor skating—"skates" are certainly tabooed at the park—but there is rowing, swimming, pony riding, etc., ad libitum.

Mr. J. C. Gilchrist's family have removed to their summer home at Vermillion for the remainder of the season.

Jacob L. Case, employed by the lighthouse department in the East, has been visiting at his home in Vermillion.

Capt. W. H. Moody combined business with pleasure after his wedding two weeks ago. His wedding tour consisted of two trips on his steamer, the C. W. Elphicke, his bride, of course, accompanying him on the boat.

FOR AMERICAN SHIPPING.

The St. Louis convention will, it is said, adopt the following plank in its platform:

We favor restoring the early American policy of discriminating duties for the upbuilding of our merchant marine and the protection of our shipping in the foreign carrying trade, so that American shipping, the product of the American labor employed in American shipyards, sailing under the stars and stripes, and manned, officered, and owned by Americans, may regain the carrying of our foreign commerce.

The last issue of THE MARINE RECORD, of Cleveland, the leading marine paper on the lakes, contains a fine picture of the handsome commander of Middle Island life-saving station, Capt. M. A. McLennan.—Alpena Pioneer.

YACHTING.

THE GERMAN EMPEROR'S YACHT METEOR.

The new cutter Meteor, for the German Emperor, was successfully launched at Glasgow on May 13. She was built from the plans of the eminent yacht designer, Mr. W. L. Watson, (the consulting naval architect to the Royal National Lifeboat Institution) by Messrs. D. & W. Henderson. In appearance she gives one the idea of a superb yacht, modeled on lines which might be termed a compromise of the leading points of excellence of the Valkyrie III. and the former yacht Meteor. The new yacht measures some 100 feet over all, and 89 feet on the load water-line, and she has a breadth of 25 feet at the deck height, and 24 feet 6 inches at the water-line. Her mast of Oregon pine is about 100 feet in length, and her topmast and gaff about half that length. She has a cylindrical steel boom measuring 108 feet in length. The christening ceremony was performed by Lady Lonsdale. A view of the yacht shortly before launching is shown in the accompanying illustration.

The new yacht took part on June 4th, in the London Yacht Club race, and judging from her performance on that occasion, she is the most speedy cutter yacht in a light wind that has ever been turned out in Great Britain, and some yachting experts claim that in a blow she will prove herself a dangerous rival to any racing craft afloat, being a considerable improvement on the Valkyrie III. She has the largest sail-spread ever put on a single stick, her sail area being much greater than that of the Valkyrie III. Her overhand is very like that of the latter.

The course was the usual one at the mouth of the Thames, and is about 50 miles. The wind was light and variable, but she made the course in 6:33:50, the Britannia coming in next in 6:47:07.

USE FOR THE LACHINE RAPIDS.

The Lachine Rapids of the St. Lawrence are at last to be utilized. For some time past work has been carried on by the Lachine Rapids Hydraulic Company upon a large wing dam which runs out for more than a thousand feet into the St. Lawrence River. A fall of water is secured by means of this dam sufficient to develop at the low water season 15,000 horse power. This water power is to be transformed into electricity. Upon the dam a power house will be built which will run its entire length and show an unbroken interior of 1,000 feet long. The basement of this will be occupied by the water wheels from the Stillwell-Bierce & Smith Vaile works at Dayton, O. The main floor will contain the dynamos, of which there will be twelve, each of 1,000 horse power or 12,000 horse power in all. They will be of the General Electric Company's latest multiphase type, and will generate current for transmission to Montreal for use there in lighting the city, operating the street railroads, and in any and all other lighting and power purposes. Apart from the fact that this plant will exceed in interest any yet installed, the contract for this electrical installation is the largest ever placed at one time for electrical dynamos. It is also worthy of note that, although it was completed for by every prominent electrical manufacturer in the world, the superiority of the American apparatus kept the order with home manufacturers.

THE SEA SERPENT IS DEAD.

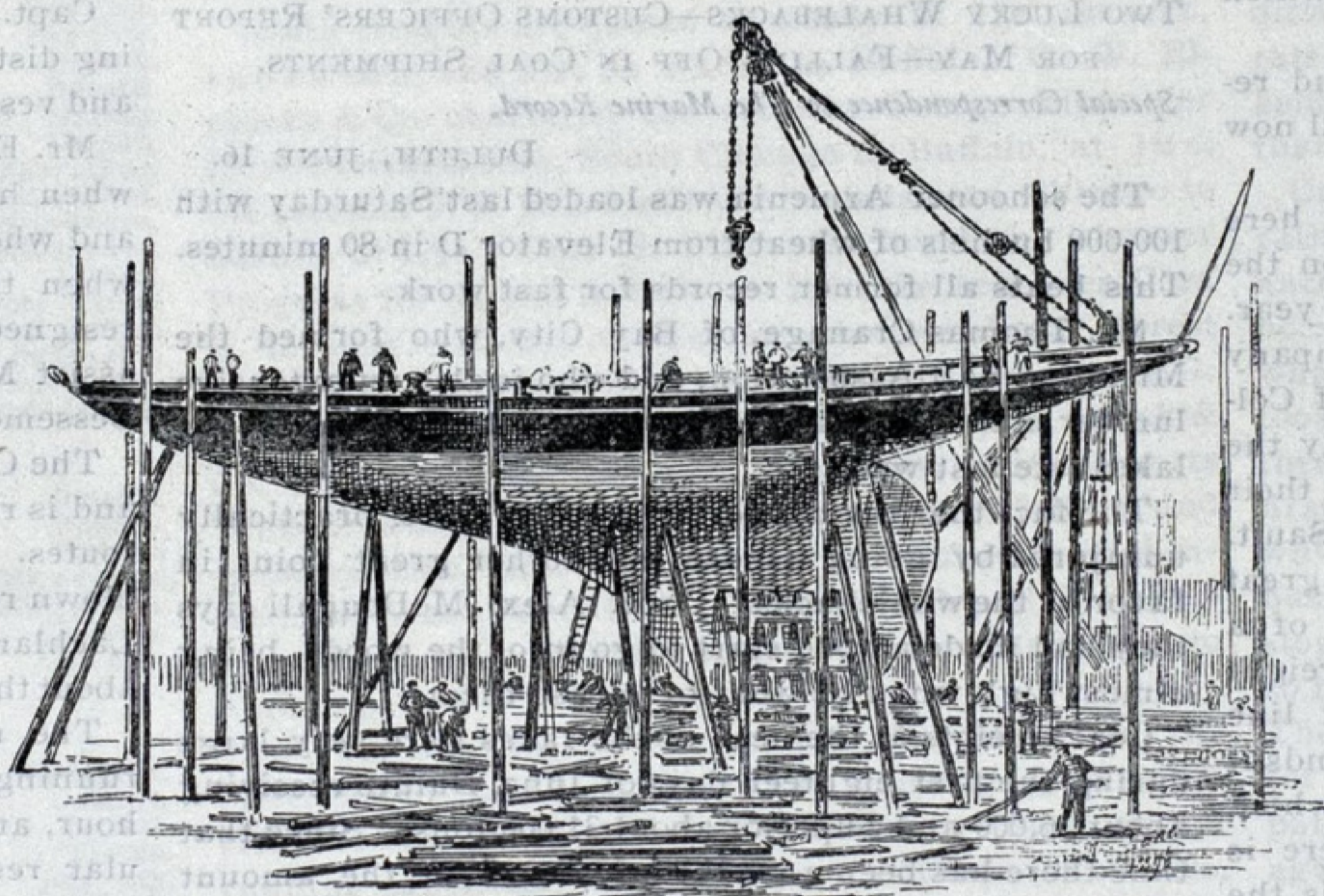
The Sault Ste. Marie News relates the thrilling adventure of John Brasser and brother, of Sugar Island, which occurred a few weeks since. Mr. Brasser was crossing Little Rapids in a small boat, when he noticed an object in the water a short distance away which appeared to be a drowned man. He rowed towards it, but on nearer inspection it proved to be a living creature about fifteen feet long, which began swimming toward him. He put the boat about and rowed for shore, closely pursued by the apparition, which he says followed him into shallow water and then turned tail. Mr. Brasser and his brother shortly afterward returned to the place with a rifle, and once more found the monster, which again showed fight. After a short skirmish they got a shot at it. The animal raised its head several

feet above the water, then fell over on its side and disappeared. Both men are positive they killed the serpent.

The monster was described as dark brown in color. As closely as he can estimate, its head was eighteen inches long and tapered off to about four inches at the end of the nose. Its head on top appeared to be twelve inches thick. Its eyes were at the extreme sides of the head and over them two bony protuberances stuck out about three inches. The animal had a mouth similar to a serpent. The body was about twenty inches in diameter, and pointed at the tail. It was about fifteen feet in length and in swimming had a sinuous movement.

STUCK ON THE WAYS.

Secretary Herbert will not advertise for bids for the construction of a torpedo cruiser in accordance with the act of June 30, 1890, appropriating \$350,000 for a vessel of 750 tons displacement, having a speed of not less than 23 knots per hour. The department at the time was unable to find anyone willing to build a ship in accordance with the provisions of this act and the money has remained unexpended in the Treasury Department. Since he began his emergency preparations coincident with the new departure in the administration's policy with regard to Venezuela, Secretary Herbert has been strengthening the navy as much as possible, and in line with this course he gave consideration to the act authorizing the construction of the vessel above referred to. The matter was referred to the chiefs of the Bureaus of



EMPEROR WILLIAM'S YACHT METEOR.

Construction and Repair and Steam Engineering, and it is their report which has caused the Secretary to abandon the idea of building the vessel unless Congress agrees to make certain modifications in the act authorizing her. The question referred to the bureaus by the Secretary was as to what modifications, if any, should be made in the plans and specifications prepared for her construction in order to that an efficient vessel might be built. The report of the bureaus states that a vessel of this class can now be built at a very much lower price than was possible at the date of the act of June 30, 1890. They are of the opinion that there is a possibility that if again advertised bids might be received for such a craft at a price within the limit fixed by the act. The bureaus also submitted these three alternative propositions, neither of which can be adopted by the Department without the consent of Congress: That the limit of cost be increased to \$400,000, thus providing for the construction of a vessel of 750 tons displacement and 23 knots speed. That the speed requirement be reduced from 23 to 22 knots, thus providing for a torpedo cruiser of 750 tons speed, with limit of cost fixed at \$350,000. That the displacement be reduced from 750 tons to 350 tons, the limit of cost reduced to \$300,000, and the speed increased to 25 knots. It is not expected that Secretary Herbert will take any action in the matter at present, but will submit a recommendation to Congress in his next annual report.—Army and Navy Journal.

At Sheboygan the contract for dredging at the new city waterworks intake has been let to the Sheboygan Dredge & Dock Co.

A PIECE OF IRON 2,000 YEARS OLD.

S. T. Wellman, the well known metallurgist, of the Wellman-Seaver Engineering Co., Cleveland, has a portion of a round bar of iron—and a few like pieces are held in the United States—that antedates the Christian era by two or three centuries. The iron, which had been originally hammered into plates, and was deeply rusted from age, was found a few years ago by Dr. Karl Humann, in the ruins of the Temple of Artemis Leucophryne, at Magnesia, Asia Minor. Dr. Humann sent it to Hallbauer, in Germany, and the latter made from a portion of it a memorial tablet. This was presented to Bismarck in April, 1894. It bore this inscription, in German: "For you, Prince Bismarck, the iron chancellor, Hermogenes forged this iron at Magnesia, 200 B. C. Humann found it in the Temple of Artemis after 2,000 years and sent to Hallbauer, who gave it the form in which it shall bear witness that your deeds shall outlive millenia." At the time of the presentation to Bismarck, Stahl and Eisen gave a photographic reproduction of the plate and an account of the discovery of the iron. The Temple of Artemis, one of the most magnificent of ancient monuments, was rebuilt about 300 B. C., though by some the date is put at 200 B. C. The metal is described as approximating steel in its composition, though closely akin to malleable iron. It was made at low temperature and great care was necessary in the forging. It was found rather difficult to roll the pieces that were preserved as relics, these having a diameter of about 1/2 in. One analysis showed carbon, 0.20 per cent; phosphorus, 0.016 per cent; iron, 92.71 per cent. Another gave carbon 0.23 per cent; phosphorus, 0.0223 per cent; sulphur, a trace, with no distinguished amount of manganese or silicon. An analysis in the laboratory of Prof. Ledebur showed 1.01 per cent of slag, 0.025 per cent of phosphorus, and 0.061 per cent of carbon.

MACHINERY EXPORTS.

There is a steady, if not rapid, increase in the exports of American machinery, says the Iron Trade Review. The Treasury Department statistics for the nine months ending March 31 show that machinery valued at \$12,897,897 was shipped from the United States for foreign countries in that period, as compared with \$11,209,428 worth in the corresponding period of the preceding fiscal year. The most noteworthy increase is in exports to the United Kingdom and other European countries. To the United Kingdom machinery valued at \$2,469,647 was shipped in the period named, against \$1,736,024 in the nine months ending March 31, 1895; to Germany, the amount was \$710,233, against \$351,133; to France, \$304,448, against \$242,021; to "other Europe," \$1,610,703, against \$538,472. Adding all up, and the total is \$5,095,031, as against \$2,867,650 in the corresponding nine months of the previous year, or an increase in machinery shipments to European countries of nearly 80 per cent. Another conspicuous increase was in the case of Mexico, the totals for the two periods being \$1,757,971 and \$1,278,076 respectively. African shipments, chiefly for mining operations, increased from \$508,418 to \$876,921. Cuba and Brazil fell away, the former from \$1,570,684 to \$324,277, and the latter from \$1,778,413 to \$908,799. Reciprocity abolition is plainly in evidence in these figures.

ON SALE AT THE RECORD OFFICE.

Beeson's Marine Directory for the season of navigation 1896 is a valuable publication and very much superior in every way to any of the previous publications. In addition to containing the names of all vessels on the Great Lakes, the dimensions and information as to class, when built, where built and name of owner or manager are given. In addition to this, there is a vast amount of general information relative to the lakes and lake country. The book contains many illustrations of lake vessels, scenes on the lakes and of men prominently connected with the maritime community.—Duluth News-Tribune.

A new lighthouse pier will be built at Church's Point, St. Mary's River, to replace the one carried away by the ice last spring.

IN THE ENGINE ROOM.

CARE OF THE MODERN MARINE BOILER.

The advent of high steam-pressure in marine practice brought with it two features of note, namely the use of fresh water in the boilers, with means for replenishing the waste, and feed-water heaters. It is true that fresh water was often used in the old practice, and feed-water heaters were not wholly unknown; but, as pressures rose and finally got well past the 100 mark, it began to be given out on authority that fresh water must be used in order to avoid the formation of scale on the heating surfaces, and the consequent overheating and rupture of the parts under the high pressure used. and, further, the increase of pressure called for thicker plates and larger rivets in boiler construction, giving the boiler less flexibility and greater liability to rupture under unequal expansion.

Many vessels, particularly those of the merchant service, can and do carry a sufficient supply of fresh water in double bottoms or in special tanks to make good the unavoidable waste. Others make use of evaporators, the scale deposited from the sea water being more conveniently removed from evaporator tubes than from the crown sheets, tubes sheets and tubes of the boilers. The attendance of the evaporators usually calls for the services of an extra man on each watch; and besides, there is usually a bill for packing, gauge glasses and general repairs; not to mention interest or investment; so that the ship owner is not long deluded with the idea that an evaporating plant furnishes make-up feed free of cost.

The virtues of feed heaters are very generally conceded. Feeding a boiler with well-heated water not only diminishes the risk of leakage and fracture, but is believed to conduce to economy of fuel, even when steam from the boiler is used as the heating agent. Heating the feed with the uptake gases is not so generally practiced at sea as it probably will be in the future, when the perfect heater shall be discovered.

Now, as a matter of fact, even when evaporators are fitted to ships, their existence is often ignored by the chief engineer, who is apt to look upon the things as unmitigated nuisances. If he wants to

make up feed, he uses salt feed; and if his internal feed pipes are properly arranged, there is no harmful result. If the feed water, after passing the check valve, is led through say, 20 feet of internal piping, and then allowed to mingle with the surface water of the boiler, we have then an arrangement which constitutes the boiler its own feed heater. The sulphate of lime is precipitated in the body of the water (whose temperature, with steam of 160 pounds pressure, is about 371° Fahr.) before it has time to reach any of the heating surfaces, and the result is a boiler free from leaks and scale, and absolutely clean, with the exception of a little mud in the bottom, which can be blown out.

Live steam heaters, with removable pans for catching the scale, are sometimes fitted over marine boilers, the heated and purified feed entering the boiler by gravity. Such an arrangement is to be recommended in the case of water-tube boilers where it is inconvenient or impossible to fit internal feed pipes.—T. W. Kennedy, Engineer U. S. N., in American Machinist.

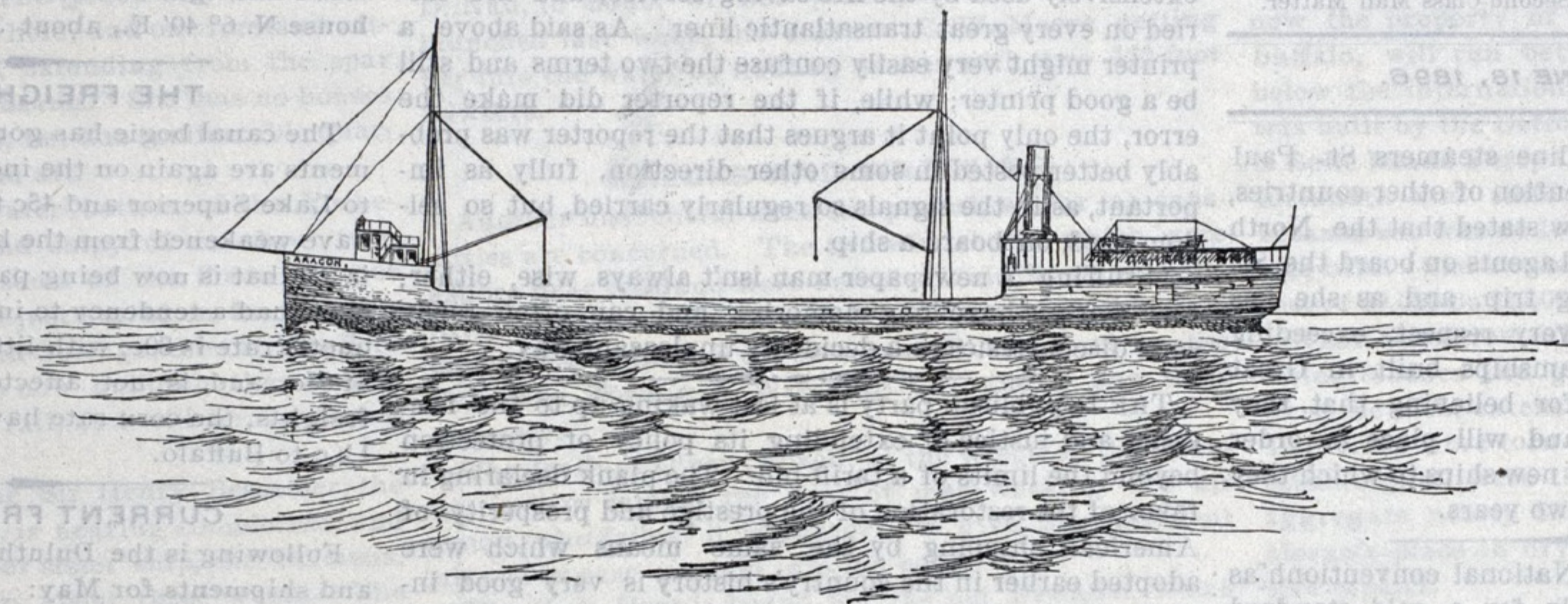
ECONOMY IN FUEL.

Undoubtedly the greatest triumph of marine engineering at the present is the saving made in fuel consumption. The marine engineer with a given amount of coal now can do twelve times the work he did fifty years ago. An eminent authority has recently computed that whereas in 1840 it was possible to move at the rate of eight knots per hour from the expenditure of one pound of coal only .578 ton displacement of vessel, 10 per cent of which would be cargo-earning

freight, it became possible in 1895 to move at the same rate of speed from the expenditure of one pound of coal a displacement of 3.4 tons of vessel, 60 per cent. of which may be cargo-earning freight, owing to the decrease of weight of hull from 40 to 28 per cent of the displacement and the decrease of weight of machinery from 50 to 12 per cent of the displacement. This means that at the present time, economical freight steamers have been so perfected that it is now possible to transport two tons of cargo earning freight at a speed of eight knots per hour on a fuel consumption of only one pound of coal, and it costs very little more to send such freight at the rate of ten knots.—Engineer.

AN INGENIOUS COMPENSATING NUT.

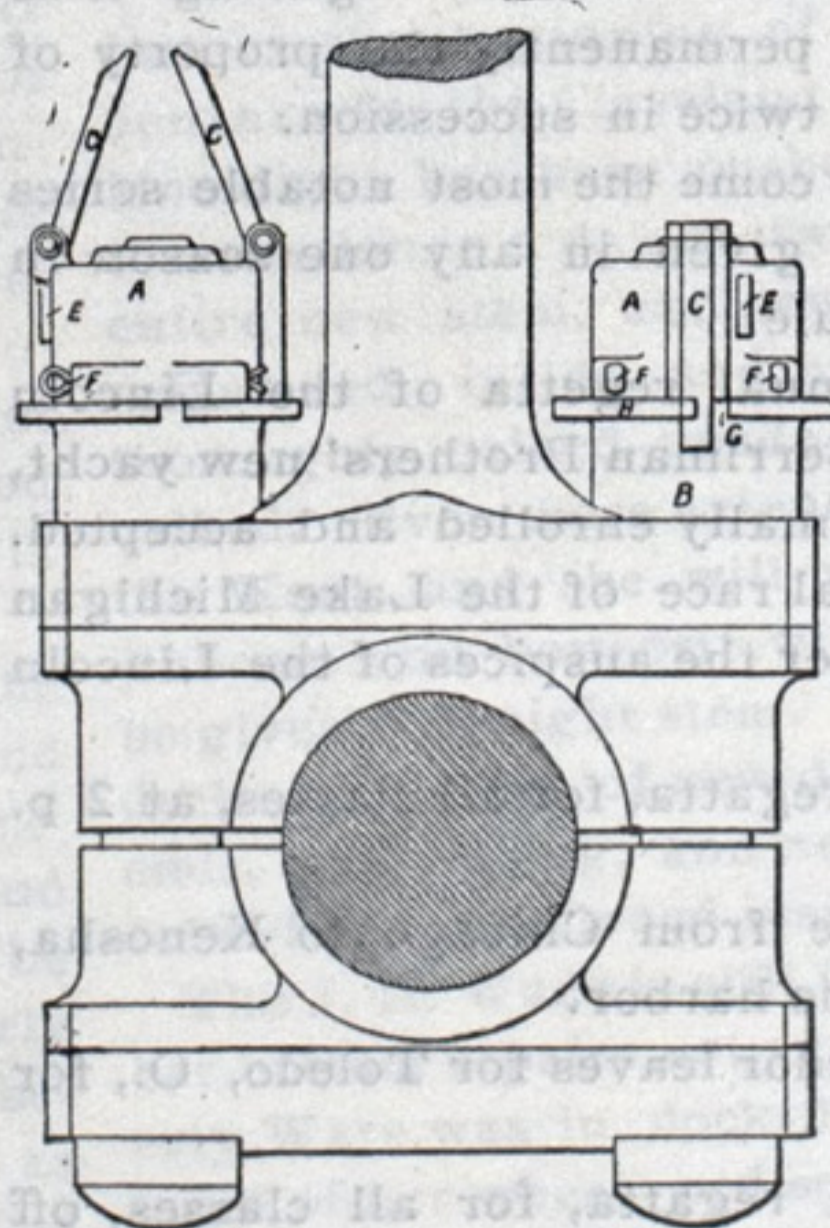
A novel arrangement brought out by Messrs. Drysdale & Co., of "Bon-Accord" Engine Works, of Glasgow, for automatically taking up the wear in the crank pin or other bearings in high-speed engines, is shown in the accompanying illustration. It consists of a round nut B, having a collar H and a separate brass cap A, inside of which is a coiled spring, one end E coming through the cap, and the other end made suitable for going through a saw draft in the reduced end of the bolt inside A. Part of the nut B projects inside the cap and has a groove all around it. Through the groove are passed the split pins F, which thus fasten the nut and cap together, while allowing them to revolve independently of one another. These nuts can be screwed on or off the bolts the same as ordinary nuts, the mode of operation in putting them on being as follows: Hold the cap so that the end of the spring



STEAMER ARAGON.

This steamer is nearing completion at the Wyandotte shipyard of the Detroit Dry-Dock Co., who are building her for C. R. Jones and others, of Cleveland. She will be the largest lumber carrier on the lakes, having a capacity for about 1,800,000 feet. She is so arranged that all hatches can be used continuously when unloading her, and has hoisting rigs that can be instantly brought into play when heavy timbers are to be moved. She is built entirely of steel, but the bottom is sheathed with wood.

inside comes fair with the saw draft in the bolt, the pawls C being up clear; then screw on nut B. Meantime the cap A will not turn around, but will follow up with the nut. After the nut is up, the cap is given a turn in the opposite direction to that in which



the nut was screwed, thus putting tension on the spring. The pawls C are now dropped into the notches G in the collar of the nut, and this completes the operation. The compensating nuts will now take up, without further attention, the wear of the brasses until they are close together. The advantage claimed for the nuts are: That there is a saving of time spent in stripping worn brasses; that silent running of the parts fitted with these nuts is assured; that the brasses will wear longer; and that there is practically no pressure on the crank-pin.

The Union Trust Co., owners of the John V. Moran, badly damaged by collision with the M. B. Grover at the Sault some weeks ago, have libeled the latter for \$30,000.

THE PROPOSED JAPANESE STEAMSHIP LINE.

It is now asserted that the rumored Japanese Steamship Company has become a fact, in all but the construction of the ships. It is said that \$5,000,000 has been subscribed by Japanese, and with it they propose to construct a line of steamships that shall run to the Atlantic, and another line that shall run to the Pacific ports of the United States. Mr. S. Asam, of Tokio, is heralded at San Francisco, as having arrived for the purpose of personally investigating American shipyards, with the object in view of having the ships constructed in this country.

This news is reassuring. It would be more reassuring, however, if Mr. Asam had placed contracts with our shipbuilders to construct their ships. If Mr. Asam is a wise man, he will inform his government, and his company both, of the probable and early adoption of a policy in the United States, favoring protection to American ships in the foreign trade, by the policy of discriminating duties. If, therefore, Mr. Asam would obtain the consent of his people to enlarge the company, and secure the co-operation of American capitalists so that the latter might preponderate in the company, and all of the ships should be built in, and at least nominally owned in the United States, the line would have an opportunity, at no distant day, of engaging in a particularly lucrative trade—a trade, too, from which their ships might be either excluded, or so discriminated against, if built in another country and owned by a foreign corporation, as to make it impossible for them to operate at a profit.

There ought to be an opportunity, in the proposed Japanese steamship line, for the investment of a large amount of American capital, and the construction in American shipyards, exclusively, of the ships that may be required to carry the growing commerce of Japan with the United States. Mr. Asam may do his company and his government an irreparable injury if he should conclude to have his ships built elsewhere than in the United States.—Seaboard.

Records heretofore made on the Short Line coal docks were knocked into flinders by Dock Master Hand and his workmen on Saturday. The quick work accomplished in loading the propeller Rappahanock and schooner Granada is beyond the best time ever made at any Lake Erie port in loading coal, and is equal to the modern machines now in use at some ports for handling coal with car-dumping machines. The work of loading the vessels Saturday morning was commenced shortly after 7 o'clock and at 3 o'clock in the afternoon 132 cars were placed aboard the two vessels, and the additional work in trimming the cargoes was also completed at that hour. The propeller and her consort took on 182 cars altogether, fifty cars being handled in four hours' time on Friday afternoon. The Rappahannock and Granada came in on Friday afternoon about 2:30 o'clock and at 3 o'clock on Saturday the propeller was on her way out, shortly afterwards followed by the Granada. Including the above eight hours' work on Saturday, ten cars of sand were unloaded from a sand steamer. Where is the port that can equal the Short Line docks in the rapid despatch of vessels?—Sandusky Register.

John Birkinbine has ascertained for the United States Geographical Survey the production of iron ore for the year 1895. The production amounted to 15,957,614 gross tons, against 11,879,679 tons in the year previous, an increase of 4,077,935 tons. This country's import of iron ore amounted to 524,153 gross tons, as against 168,541 tons in 1894. The shipments of ore from Lake Superior were 7,748,932 tons in 1894, and 10,438,268 in the subsequent year. The production of pig iron, including spiegeleisen and ferro manganese, was 6,657,388 tons in 1894 and 9,440,308 tons last year. The production of coal during last year was 171,804,742 tons, an increase over the production of 1894 of 19,350,000 tons, valued at \$197,572,477.



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THE success of the American line steamers St. Paul and St. Louis, has turned the attention of other countries, to American shipyards. It is now stated that the North German Lloyd Steamship Co. had agents on board the St. Paul during her record breaking trip, and as she has proved herself such a model in every respect, exceeding in speed the higher-powered steamships built in Great Britain, there are many reasons for believing that they will profit by their observations and will place an order with the Cramps for some of the new ships to which they expect to build during the next two years.

The fact that the Republican National convention has decided to declare unequivocally for a gold standard ought to have a more reviving effect on business than could be accomplished by the nomination of any one man. Circumstances have made the two principles of "tariff for revenue" and "high tariff for protection" substantially one and the same thing, so that issue has practically been settled for a long time. But the money question has caused great uneasiness in the financial and manufacturing centers, and anxious business men have acted with great unanimity in bringing pressure to bear on delegates and campaign managers to take a decided stand. The position of the leaders of the Democratic party has already been outlined by the present administration, and with all these assurances capital will undoubtedly move more freely.

THE recent collision between the schooner Sunrise and barge 133, which resulted in the total loss of the latter and caused some criticism of the White law, is bringing to light more discussion on a point on which THE RECORD laid considerable stress just prior to the opening of navigation this year—the quality of bells used on steamers and tow barges. The law may be considered slightly faulty in the respect that its stipulation as to the quality of bell is rather vague; but the bells are subject to the approval of the inspectors of hulls, and should be rigidly inspected. There have been cases in which the poor bells were placed on board because of their cheapness, some owners preferring to use a cheap cast iron affair that can hardly be heard the length of the ship, rather than incur \$10 extra expense to secure a bell that is worth the trouble of attaching it to the mast. One great trouble has been, however, that after the owners have properly equipped their ships with bells, they have been carried off by dishonest persons and poor bells substituted. This one point is where some additional protection is needed, and it might be that this was the trouble when the collision referred to occurred.

MARINERS AND THE DAILY PRESS.

There is almost too much disposition shown on both the coast and the lakes to criticise closely the hard-working reporters on daily newspapers. This is combined with a lot of chaffing which is considered funny, but which is an exhibition of narrow-mindedness. A paper at the head of the lakes a few days ago printed the information that a steel steamer, which it misnamed, was in dry-dock having every seam calked, having the stem of the starboard side plated anew, and the rudder painted. A daily newspaper man, when he goes into a manufactory, is treated with the courtesy warranted by his errand—a legitimate business, by the way, is a systematic search for information—and his ignorance regarding a few technical terms is not considered a subject for mirth; but he is given the information desired in a manner to make it clear to him, when he in turn may make it plain to the non-technical public. On the other hand, see how a little slip, which might be a typographical error, is made the subject of an exhibition of peevishness by so representative a paper as the New York Maritime Register:

A morning paper in giving the list of the stores carried by the small boat that has started to cross the Atlantic, mentioned customs signals as part of the equipment. What these signals are, or what good they would be, the paper does not state. There are some signal lights used which are known by the name of the maker, but the other kind must be something of as little soundness as the minds of the two men who have started on this stupid trip.

Now, it requires very little technical knowledge, and not an exhaustive use of common sense to see that the reporter undoubtedly referred to the Coston lights, which are so extensively used by the life-saving service, and are carried on every great transatlantic liner. As said above, a printer might very easily confuse the two terms and still be a good printer; while, if the reporter did make the error, the only point it argues that the reporter was probably better posted in some other direction, fully as important, as in the signals so regularly carried, but so seldom used, on board a ship.

"Stuffing" a newspaper man isn't always wise, either; for reporters have long memories, and can often repay such discourtesies in a decidedly unpleasant way.

THE Republican party is at last waking up to the necessity and justice of extending its policy of protection beyond the limits of a tariff bill. The plank declaring in favor of the restoration of the prestige and prosperity of American shipping by the same means which were adopted earlier in the country's history is very good indeed. This party is now in power in Congress; let Congress see to it that the promise made by the party is carried out during the short session. Such legislation cannot be enacted too quickly.

LAKE MICHIGAN YACHTING EVENTS.

The yachting season at the Chicago end of Lake Michigan will be inaugurated Saturday, June 20, with a race by the Columbia Yacht Club. The trophy race will be a silver cup donated by Ferdinand Peck and valued at \$300. This can be competed for by boats of the Columbia Club of the first three classes, figuring time allowances, and becomes permanently the property of the competitor winning it twice in succession.

Following this race will come the most notable series of yachting events ever given in any one season in these waters. The schedule:

Saturday, June 27, annual regatta of the Lincoln Park Club at which the Berriman Brothers' new yacht, the Vencedor, will be formally enrolled and accepted.

Saturday, July 4, annual race of the Lake Michigan Yachting Association under the auspices of the Lincoln Park Yacht Club.

Saturday, July 11, club regatta, for all classes, at 2 p. m., off Lincoln Park.

Saturday, July 18, race from Chicago to Kenosha, starting at 9 a. m. from the harbor.

Monday, July 27, Vencedor leaves for Toledo, O., for the international regatta.

Saturday, Sept. 19, open regatta, for all classes, off Lincoln Park, at 2:15 p. m.

Thomas Boyle, Chairman of the regatta committee of the Columbia Yacht Club, has issued the following racing schedule:

Saturday, June 20, Michigan City race, start at 1 p. m. sharp. Judges' and guests' boat will leave the club-house at 12:40 p. m.

Saturday, June 27, regatta for fourth and fifth class

open yachts, start at 2 p. m. sharp. Judges and guests will leave the club-house at 1:40 p. m.

Saturday, July 18, dinghy race [sailing], start from club-house at 3 p. m.

Saturday, July 25, club regatta for all classes, start at 2 p. m. sharp. Judges and guests will leave the club-house at 1:40 p. m.

Saturday, Aug. 1, dinghy race [rowing] start from club-house at 3 p. m.

Saturday, Aug. 15, club race and cruise to Menominee, Mich., to be run on points between ports, start at 3 p. m. sharp.

Saturday, Sept. 12, open regatta, start at 2 p. m. sharp. Judges' and guests' boat will leave the club-house at 1:40 p. m.

NOTICE TO MARINERS.

MAUMEE BAY—INNER END OF STRAIGHT CUT LIGHTED BUOY.

The Lighthouse Board gives notice that, on or about June 20, 1896, and thereafter during the present season of navigation, a fixed red light will be shown from a lantern suspended from red spar buoy No. 30, marking the extreme inner end of the straight channel in Maumee Bay. Manhattan range (front) light, SW. 7/8 W., about 25,000 feet.

LAKE MICHIGAN—OUTER SHOAL BELL BUOY.

Notice is hereby given that, on June 3, 1896, an automatic bell buoy, painted red, was substituted at the same moorings for the red second-class nun buoy formerly marking Outer Shoal, to the southward and westward of the entrance to Porte des Morts Passage from Lake Michigan. Porte des Morts (Pilot Island) light-house N. 6° 40' E., about 3 1/2 miles.

THE FREIGHT SITUATION.

The canal bogie has gone into its hole, and the shipments are again on the increase. The rate is still 35c to Lake Superior and 45c to Milwaukee. The ore rates have weakened from the head of Lake Superior, and 90c is all that is now being paid. The lower rate has, however, had a tendency to increase shipments. The Marquette rate is 80c, with little doing. Escanaba is steady at 55c, and is not affected by weakness in Chicago freights, the corn rate having gone from 1 1/8c back to 1 1/4c to Buffalo.

CURRENT FREIGHT FIGURES.

Following is the Duluth statement of grain receipts and shipments for May:

	Receipts.	Shipments.
Wheat.....	4,048,831	7,965,187
Corn.....	693	147,495
Oats.....	436,628	517,459
Rye.....	82,851	104,539
Barley.....	360,599	202,050
Flax.....	86,487	590,560

Ashland ore shipments for the week ending June 13 were 82,000 tons.

Gladstone shipments last week were: Ore, 125,000 tons; grain, 320,000 bushels; flour, 21,800 barrels; lumber, 785,000 feet; cedar, 58,000 pieces; pig iron, 1,125 tons.

NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for the week ending June 6:

Official No.	Rig.	Name.	TONNAGE.		Where Built	Home Port
			Gross.	Net.		
141,432	St. s.	Lagonda	3,647.40	3,017.34	W. Bay City	Cleveland
136,554	St. s.	E. Gertrude	14.80	10.06	Har Springs	Grand Hav'n
116,719	Slp.	Scorpion	7.10	6.75	Toledo	Erie
67,317	Brge.	W. & M. No. 3	1,581.05	1,581.05	Toledo	Toledo
67,318	Brge.	W. & M. No. 4	1,581.05	1,581.05	Toledo	Toledo

During May Scotch shipbuilders launched 36 vessels, of 32,830 tons (against 25 vessels, of 42,228 tons, in April last, and 38 vessels of 55,249 tons in May, 1895.) For the year so far 172,942 tons have been launched, against 146,355 for the same period last year, 142,774 tons in 1894, 104,777 tons in 1893, 172,485 tons in 1892. English builders launched 23 vessels in May, as compared with 24 the previous month.

THE MARINE RECORD, of Cleveland, is a thoroughly up-to-date journal. It has become the recognized authority on all matters pertaining to the shipping on the Great Lakes and canals of North America.—Philadelphia Commercial List, June 13, 1896.

SHIP BUILDING AND REPAIRS.

AN ENLARGED PLANT—WORK AT THE YARDS.

The Chicago Ship Building Co., at South Chicago, are hard at work on plant extension. The big Minnesota steamship is building alongside the dry-dock, into which she will be launched, and the dock is being extended 50 feet or more, which will make it an immense affair. The work on the steamship and three barges, two of which are for the Rockefeller, and one for the Minnesota fleet, is not hindered by these operations, and they are being pushed rapidly forward.

It has been definitely decided by the Chicago Ship Building Co. to proceed at once with a machine shop, and hereafter they expect to construct their own engines and boilers. This will give their yard some advantages it has not heretofore possessed, and indicates confidence in the signs that ship building is not only a permanent but a steadily growing industry.

At the yard of the Cleveland Ship Building Co. the steamer Queen City, for the Zenith Transportation Co., is nearly finished, and will be in service by July 1. Some delay has been caused by the non-arrival of one of the two Babcock & Wilcox boilers that are to be fitted in the boat. One arrived all right, and is now in place and ready for testing. The other, which was started at the same time, met with a mishap while transferring at Buffalo, and fell into the mud, where it lay for some days. It was expected to arrive this morning, and will be fitted in at once. The boilers fit very snugly, one on each side of the ship, leaving a roomy stokehold on the between-decks of the ship. The Queen City has several thwartship bulkheads in her hold, and one fore-and-aft bulkhead on the line of keel, extending from the spar deck down to the main deck beams. She has no houses on deck, except a small texas, but has comfortable quarters below decks, forward and aft.

The construction of the water bottom of the Rockefeller boat at the Cleveland shipyard is about two-thirds completed, although some of the floors are not yet laid. This company has just loaded on the steamer Viking, for shipment to South Chicago, the three boilers for the Minnesota steamship now building there. The engines will be shipped by rail, and will be forwarded in a few days.

At the Globe shipyard the Sir Henry Bessemer, the first of the Rockefeller fleet, is nearing completion, and will be out about July 1. Her sister ship, the Siemens, will probably be launched in about three weeks. The revenue steamer W. Q. Gresham will not be launched for some little time, as Supt. Curr thinks the work will progress more rapidly if she is nearly completed before being placed in the water. Owing to the many delays for which the builders were not responsible, the government has extended the time for her completion to September 1.

At the Globeyard are a number of fine lathes, etc., made by the Prentiss Tool and Supply Co., of New York, and the Ohio Tool and Machine Co., of Kenton, O., which are to constitute a part of the equipment of a machine shop on board the revenue cutter, which will be a great convenience at all times, but would prove invaluable in time of war. The cutter will be supplied with all conveniences in equipment, one of the most noticeable being some very nicely adjusted spring chain stoppers, which greatly relieve the strains of cables.

L. P. and J. A. Smith have almost completed the first of their two new steel scows, and it will be launched within a few days. It is a staunch looking craft, and is well calculated to withstand much hard bumping.

At F. W. Wheeler & Co's yard, West Bay City, the steamer Lagonda, building for Capt. John Mitchell and others of Cleveland, is getting well along. It is expected that she will be launched on the 27th inst., and will be completed during the first week in July. The Rockefeller steamer building at this yard is nearly plated, and laying of the upper-deck stringers has begun. A full force of men are at work on her, as well as on the tow barges building for the same company. The barges are about as far along as the steamer, but as there is less work on them they will be finished before the steamer. Part of the bottom of the new steel car ferry for the F. & P. M. Railroad has been laid, and bending of the topside frames has begun. She will progress rapidly from this time forward and will be out in time to do considerable service during the late months

of the season. All the ships, except the Rockefellers, are building under the inspection of Mr. Robt. Logan.

The Detroit Dry-dock Co. expect to launch the big steamer Senator, building for the Wolverine Steamship Co., next Saturday afternoon, June 20. The management have decided to make all launches at this yard private hereafter, as they have been expected to reimburse a few spectators of previous launches for slight discomforts, the result of their own foolhardiness. The steamer Aragon is practically ready for delivery to her owners. The two steamers building at this yard for the Bessemer Steamship Co., are going forward at a rapid rate, and will probably be completed on contract time.

The American Steel Barge Co., at West Superior, have increased the force of men at work on the whale-back steamer and barge now under construction at the yard for the Bessemer Steamship Co. The steamer is 404 feet long, the largest ever built at this yard, and this necessitates lengthening the slip considerably before she can be launched.

LAUNCHES OF THE WEEK.

Car ferry No. 4 of the W. & M. line was launched last Thursday afternoon at the yard of the Craig Shipbuilding Co., Toledo. Like her sister barge, launched a few weeks since, she is 317 feet long by 46 feet beam. The barges were launched in practically a finished condition, and the tug S. M. Fischer, built at the same yard for the W. & M. line, got away with them for Lake Michigan Tuesday.

Nau Bros.' new tug at Green Bay is receiving her finishing touches. She is pronounced a handsome tug, with plenty of power. She has been christened George D. Nau, in honor of her principal owner. She was launched last week, the steamer C. W. Moore getting her into the water by hauling on her with two 150-foot hawsers.

WRECKS AND WRECKING.

Another uneventful week has passed, so far as casualties are concerned. The two whalebacks which were ashore near Ashland were released uninjured, and the little schooner Kanters, which had been formally abandoned, was pulled off the reef near Pilot Island by the Escanaba Towing & Wrecking Co., and is now their property.

The death of Diver Colwell, at the wreck of the Cayuga, is now laid at the door of men working the air pump, who failed, it is charged, to give him sufficient air. The case may get into the court.

The H. A. Root is bound for the old Pewabic, which lies in Lake Huron, off Thunder Bay, with a unique diving car owned by the American Wrecking and Salvage Co., of Milwaukee. The details of the expedition, and of the construction of the car, have been kept secret.

C. A. Macdonald & Co., of Chicago, will receive bids until July 1, for the steamer Jim Sheriffs, just as she lies at Milwaukee.

GENERAL REPAIR WORK.

CLEVELAND—The arrival of the Moonlight and Kent just at the beginning of the dull season has been a bonanza for the Cleveland dry-dock Co. Work on the Moonlight has been pushed hard, and she will be in commission in a day or two. She has been given an entire new stem, and new starboard quarter; has been refastened inside and out, given new planksheer; thoroughly calked inside and out, and has her deck calked. Even more extensive repairs are in progress on the Kent, and she will be almost rebuilt. Her jibboom and bowsprit will be taken out, and she will be given a straight stem. Her repairs will include new decks, a number of new deck beams, new cants at both ends, new ceiling, and new keelsons. She will be recalked and refastened inside and out.

The J. H. Wade is still in the Ship Owners' dry-dock, her bottom repairs not yet completed. The yacht Liberty Ware was in dock during the week for readjustment of her wheel, and schooner Sandusky for calking.

The Northern King was at the Globe Shipyard during the week for some machine repairs.

CHICAGO.—At Miller Bros., shipyard the steamer H. W. Williams is in dock for a new wheel and shoe and repairs to stern bearings; the tug L. B. Johnson to have a leak stopped and stern bearings repaired; the tug Viola and schooner Fanny Neil for some bottom calking; the

steamer George Stone for some new keel, new forefoot and repairs to stern bearing; the tug O. B. Green for repairs to stern bearing; the tug Strohn for a new forefoot, stem and stem iron.

DETROIT.—The Frontier Iron Works report the work progressing as fast as possible on the new engines for the steamship Merida. One bed plate and several frames are cast, and the builders do not anticipate any difficulty in completing the contract in the time specified—58 days.

S. F. Hodge & Co. have taken a sub-contract for about half the work. In the meantime the ship lies at her wharf. All the debris has been cleared away, and two weeks more will see the work of replacing the engines commence.

Captain Ruelle has men hard at work rebuilding the upper-works on the tug C. A. Lorman, and expects to have her out the last of next week. She was full of sand when found, and it is remarkable that no greater damage was done. She was three days in a heavy gale on the beach off Leavinton, in water deep enough to allow every swell to strike her with its full force; yet her hull is practically intact. The Lorman is one of staunchest tugs of her inches afloat. Captain Ruelle expects to have the Lorman out by the last of next week. The captain's tug Grace Ruelle broke her crank-pin at Pike Creek on Sunday evening, and his other tug, the J. L. Miner had to tow her to Detroit. The damage was slight, and she was out on Tuesday.

The steamer Argonaut is in the Detroit dry-dock for repairs necessitated by the breaking down of her engine, which is being rebuilt at the engine works. The Marquette has received a new Scotch boiler, and is again in commission. The old ferry steamer Hope, now the property of the International Ferry Co., of Buffalo, will run between Black Rock and Victoria, below the international bridge on Niagara River. She was built by the Detroit Dry Dock Co., for the Detroit & Belle Island Ferry Co. in 1870. She was always very fortunate and suffered no accidents, and was sold because she was no longer large enough for ferry service here. She has been rebuilt from the keel up at a cost of \$9,000 or \$10,000, and is practically a new boat.

WEST SUPERIOR.—The John V. Moran received finishing touches and got away last week. Her repairs were the most extensive of any made here this season. The sides were torn off and the between decks were taken out, all were thoroughly renewed. The bill will aggregate nearly \$20,000. The Gilbert has taken the Moran's place in dry-dock. She is undergoing extensive repairs.

REPAIR NOTES.

The steambarge Alcona, which broke her crank-pin several days ago, left Thursday of last week for Lake Erie ports. It was necessary to make a new pin and other appliances. The work was done at the shop of Hickler Bros.

The schooner Brenton, whose crew was saved by the life-savers at Pelee Island some weeks ago, is receiving repairs at Vermillion. She was severely damaged, and will need partial rebuilding.

The steamer J. R. Langdon, which touched at the foot of Lake Huron, broke twelve planks, which were repaired at Milwaukee. Repairs were completed by Sunday evening.

FOR SALE AT THE RECORD OFFICE.

CLEVELAND, O., May 15, 1896.

Directory received. It is a marvel of beauty.

LOFTUS CUDDY.

The above is an extract from one of many letters that refer to Beeson's Marine Directory, the entire volume of which could not be printed in two issues of this paper. We have secured from the publisher a large number of copies and offer them to our readers at the publisher's price, \$5 per copy, post or express paid. Order while they last.

THE MARINE RECORD'S Directory of Masters and Engineers fills a long-felt want, and is an invaluable book for handy and speedy reference regarding those in command of either end of the vessels on the Great Lakes. A large amount of work is necessary in compiling such a book, and it is sure to be very popular with all vessel owners, as well as masters and engineers. THE RECORD is to be complimented in its work. Price 25 cents.

AMERICAN STEAMSHIPS ATTAIN THE ACME.

The steamship St. Paul, the newest and best of the American Line, has won for the American flag a very proud position again. It is only three years ago that President Harrison inaugurated this new line of American transatlantic steamers after more than thirty years of decadence of our flag on the ocean. It was then stipulated that two steamships should be built in this country as good as the two owned by the line which were built abroad. These ships would have to sustain a sea speed exceeding twenty knots and pass muster in character available for auxiliary naval cruisers. It was a big undertaking as a new venture, yet no limit to the conditions was asked after the contract was made, and the result has shown that American skill and energy not only equaled but easily surpassed the conditions called for. The American shipbuilders have done more. They have produced the fastest vessels for their horse-power and coal consumption that the world has ever dreamed of, while giving the most luxurious accommodations for passengers that have ever been furnished afloat. Surely this is a supreme triumph for the American Line, for the American shipbuilders, for the nation and for the flag; but it is merely illustrative of what we can do if sufficient governmental encouragement is afforded. Does it not prognosticate the return of American commerce to pre-eminence on the ocean? If not, our legislators, our patriots and our business men will be far behind their promise.

The latest achievement of the St. Paul is well worthy of record. On her run last week from Southampton to this port she made a course of 3,113.7 knots in the hitherto unprecedented time of 6 days, 5 hours and 32 minutes. The best previous record for the voyage was that of the steamship New York, of the same line, in September, 1894, making the time of 6 days, 7 hours and 14 minutes over a course of 3,047 knots. The best average hourly speed of the New York was 20.15 knots, while the St. Paul made an average of 20.82 knots for the total distance across, and for more than 48 hours continuously made an average speed of 21.74 knots per hour. This speed compares marvelously ahead of the new giants of the veteran Cunard line, in consideration of the conditions. The St. Paul's tonnage is 11,629, her horse power 20,000, and her coal consumption 310 tons per day. The Lucania and Campania are each 12,952 tons, with 30,000 horse power, and burn 540 tons of coal per day. The Lucania's best hourly average for the voyage to Liverpool has been 22.01 knots and the Campania's 21.82 knots. The St. Paul on her trial trip did not make the speed of her present record, but has steadily increased it, coming up to an average of 20.34 knots some trips ago and now indicating that she will probably be able to maintain an even 21½ knots for the voyage before very long. On no day of her most recent voyage did she travel less than 500 knots in 24 hours after getting clear of land, her daily runs being 487.8, 521.9, 521.7, 513, 508.6, 518.9, and 41.8 knots to Sandy Hook.

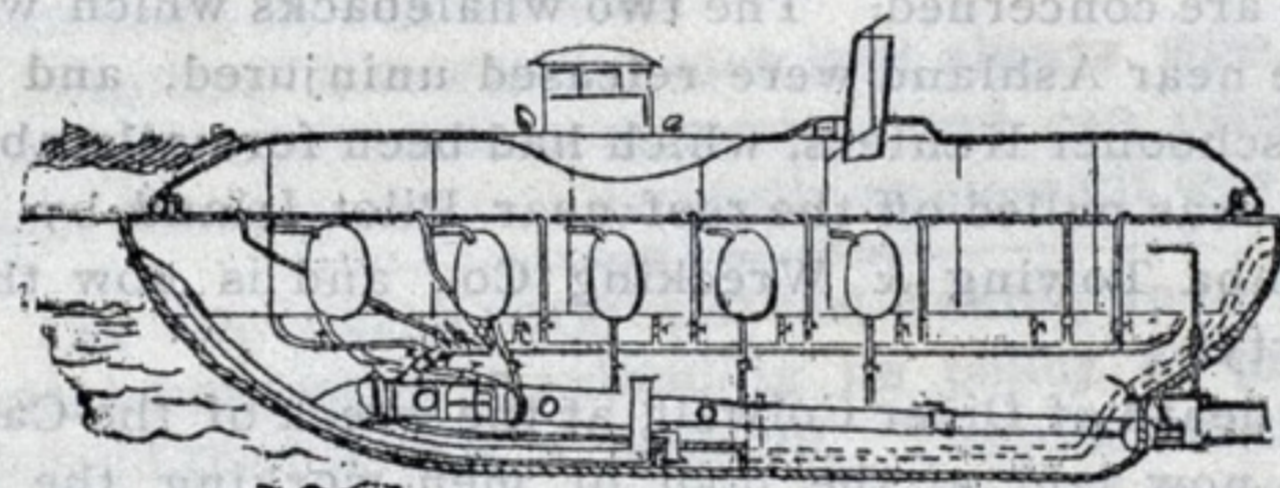
The self-contained power necessary in a vessel in order to accomplish this record can only be realized by contemplation of the wonderful development and progress made in steamship building in recent years. Every one can remember when a sustained sea speed of ten knots per hour was considered excellent. To have more than doubled that now for ordinary commercial purposes is certainly one of the greatest achievements of the age, and that a firm of American shipbuilders have been able to accomplish the acme of success in this line—the greatest speed with the greatest economy—is surely the proudest attainment of their splendid record. Critics of war ships built by the Cramps have averred that they never equaled the speed attained on their official trials. The showing of the St. Paul, with her continuously increasing development of speed, amply refutes any such insinuation of inability on the part of the Cramps' shipbuilding productions. Of course no little credit is due to the commander and engineer of a steamship for accomplishing such a world's record, and Capt. J. C. Jamison, with Chief Engineer Carnegie, of the St. Paul, have it in full measure. But speed alone cannot win custom for a ship. The efforts of the American Line officials in every detail to please their patrons is being crowned with success. Passengers find that on account of the high freeboard of the St. Paul, St. Louis, Paris, and New York and their ease in a sea way owing to their excellent model, they are the most comfortable of

any transatlantic craft. In point of speed it is certain that, with her latest improvements, the St. Louis will not be far behind her sister. The day is surely coming when these ships will but be illustrations of the finest commercial fleet under one flag that the world ever saw. American ability has been conclusively demonstrated.—Marine Journal.

The record of the American line steamer St. Paul will undoubtedly do much for American shipbuilding. The country will rejoice at it, as an exhibition of what Americans can do in the way of fast steamers. But it is of greater value as an evidence of the capabilities of the American shipbuilder, showing not only to Americans but to other maritime people that the shipyards of this country can send out as fast and as good boats as can be found anywhere, and that with sufficient orders the American yards will find a way to compete with any in the world. Americans themselves should remember this fact, and not cling to the belief, which they evidently do at present, that there must be some radical change or wonderful transformation before they can venture into shipping again. The St. Paul is a wonder, compared with steamers of greater horse-power. The Cramps and other builders are making the way for the rebuilding of merchant marine easier.—New York Maritime Register.

A NON-SINKABLE LIFEBOAT.

The invention of Mr. J. C. Walker, of Waco, Tex., is claimed to be one of the most complete lifeboats ever conceived. The boat is practically incapable of being sunk, and can be capsized and righted again in the heaviest sea without danger to its occupants. The boat is of the whaleback form, and has all the openings in its upper deck closed by automatic doors, so that in case of a capsize the water cannot enter the hull. The boat is immediately righted after capsizing by air-tight compartments in its upper deck. For propelling the boat forward the inventor contemplates using a strong



jet of water ejected from the stern of the boat. This water is first drawn into the hull through a pipe at the bow.

The vessel is divided into a number of compartments, each of which communicates with the water-ejecting pipe, so that if one of the compartments is stove in the water is drawn from that compartment and used in propelling the boat.

A number of oil tanks are arranged about the inside of the hull, and are adapted to discharge their contents by means of a force pump through apertures in the sides of the boat. When the boat goes to a rescue in very rough water it takes a course to windward of the wrecked vessel and starts the oil pumps, and as it passes around the wreck oil is poured upon the waves and lessens their force. Air is pumped into the closed hull at any time desired through suitably covered apertures. A cupola with glazed sides is arranged for the steersman.

Charles H. McLellan, of Tims River, N. J., has secured a patent (No. 561,807) on a buoy or life preserver, which ought to be effective and lucky, since it is made in the form of a horseshoe, open at one side, and having its ends provided with projections adapted to engage with the arms, when applied to the body or person, and hold it in place.

THE MARINE RECORD'S Directory of Masters and Engineers fills a long-felt want, and is an invaluable book for handy and speedy reference regarding those in command of either end of the vessels on the Great Lakes. A large amount of work is necessary in compiling such a book, and it is sure to be very popular with all vessel owners, as well as masters and engineers. THE RECORD is to be complimented in its work. Price 25 cents.—Detroit Journal.

TRADE AND INDUSTRIAL NOTES.

Jenkins Bros., of No. 71 John street, N. Y. are distributing very handsome half-tone views of the Russian imperial yacht Standart, to which several hundred of the Jenkins valves have been supplied.

John A. Flajole, of Bay City, has been putting one of his water-tube boilers in the tug Jim Pullar, at Port Huron.

Messrs. Yarrow & Co., of Poplar, Eng., have received orders from the Chilean government for the immediate construction of six torpedo boats, 150 ft. in length by 15 ft. beam, armed with torpedoes and quick-firing guns, of the same type as the Viper, recently supplied by them to the Austrian government.

A new era in the car-building industry has opened by the shipment to Saratoga, by the Carnegie Steel Co., of the first steel cars ever manufactured. The cars are to be exhibited at the national convention of the Master Car Builders' Association. The company, while going to the expense and labor of constructing the cars, says it will not enter into their manufacture. The life of a wooden car, they argue is about twelve years, while the steel car will remain serviceable from twenty to twenty-five years. In a wreck with the old wooden car the debris is generally burned and the material is a dead loss. A wrecked steel car can be sold for scrap at the rate of \$10 per ton, and, besides, a train of seventy steel cars will carry as much as a train of one hundred wooden cars.

The windlass equipment of the steam yacht Enquirer, described in last week's RECORD, was furnished by the American Ship Windlass Co., of Providence, R. I. This same company has just furnished a windlass to the yacht building at the Erie Basin, Brooklyn, N. Y., for Mr. C. D. Borden, under plans of J. Beaver-Webb, which yacht is said to be the largest ever built in this country. The Atalanta, George J. Gould's steam yacht, is exchanging her Providence windlass, with which she was equipped thirteen years ago, for one of the latest styles of the same make.

H. G. Trout, Buffalo:—We beg to inform you that the propeller wheel we purchased from you last summer for the tug Copanang has given us most excellent satisfaction. Our men inform us that it is the best wheel we have ever put on the tug. Yours truly,

H. H. Cook, President,

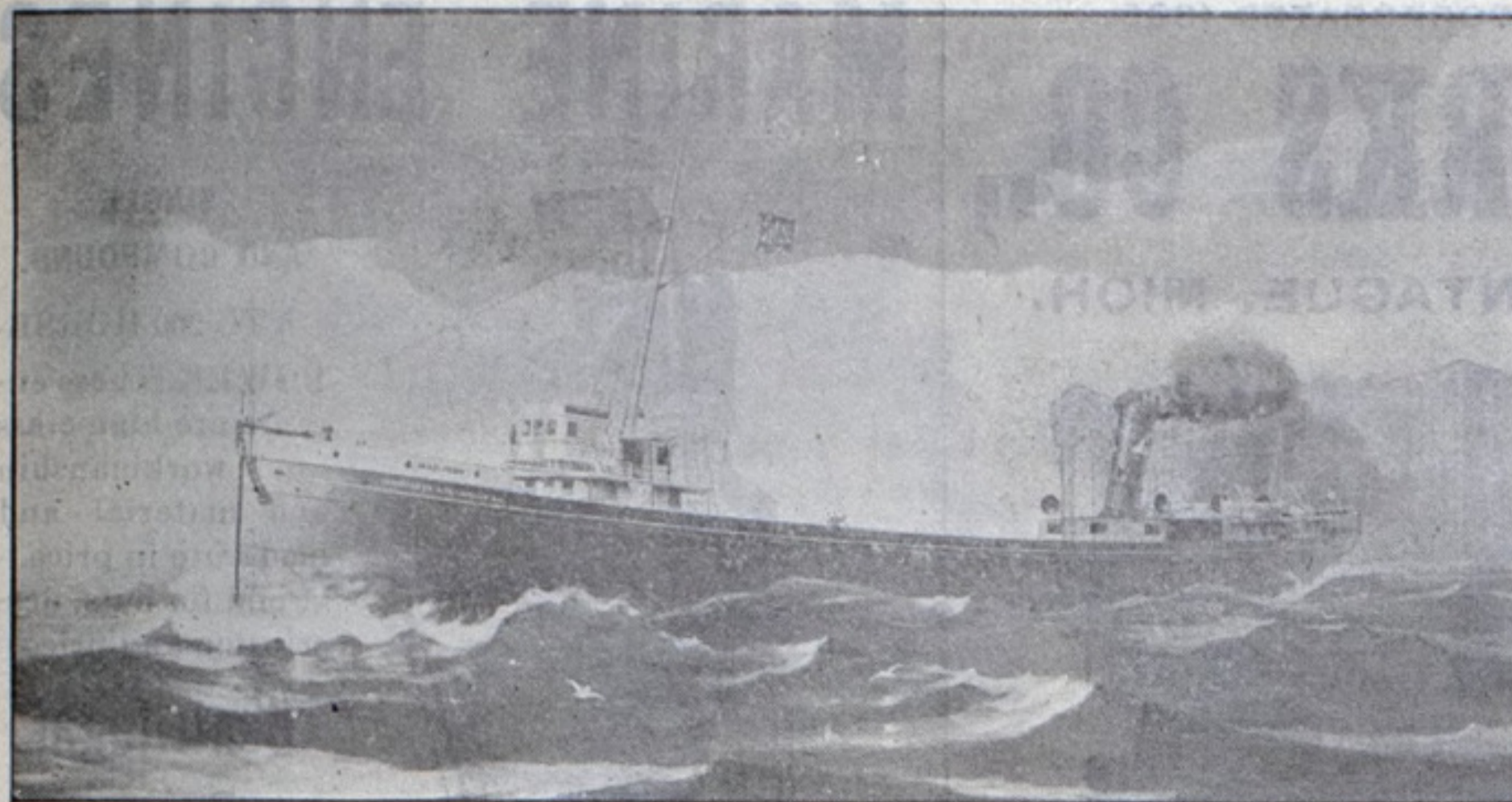
The Ontario Lumber Co., Ltd., Toronto.

The frontispiece in Scribner's for July is from a painting by Walter Gay, which suggested a dramatic story, written by his cousin, which appears in this number. Sir William Martin Conway gives a graphic account of a trip of "A Thousand Miles Through the Alps." Julian Ralph gives a very fine description of Coney Island, which he says "still remains the king of all popular resorts in America." Henry McCarter, the impressionist accompanies the article with, some of his striking illustrations.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, June 13, 1896:

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Albany		20,000	50,000		
Baltimore	308,000	820,000	266,000	27,000	
Boston	620,000	58,000	5,000		
Buffalo	929,000	247,000	410,000	191,000	205,000
Chicago	13,871,000	5,577,000	1,678,000	307,000	10,000
Cincinnati	5,000	2,000	16,000	1,000	8,000
Cleveland	121,000	18,000	13,000		2,000
Duluth and Superior	8,413,000	5,000	227,000	308,000	161,000
Indianapolis	30,000	94,000			
Kansas City	1,010,000	30,000	26,000	28,000	
Milwaukee	503,000	2,000		410,000	26,000
Minneapolis	17,050,000	55,000	540,000	82,000	19,000
Montreal	456,000	51,000	366,000	6,000	65,000
New York	2,459,000	1,062,000	1,761,000	63,000	8,000
Oswego	17,000	8,000	165,000	2,000	
Peoria	166,000	79,000	137,000		
Philadelphia	471,000	149,000	69,000	1,000	
St. Louis	113,000	95,000			
Toledo	257,000	69,000	17,000	100,000	
Toronto	98,000	3,000	89,000		21,000
On Canal	1,232,000	166,000	897,000	64,000	110,000
On Lakes	1,132,000	705,000	1,605,000		182,000
On Mississippi	103,000	93,000	33,000		
Grand Total	49,486,000	9,406,000	8,430,000	1,590,000	877,000
Corresponding date 1895	47,717,000	10,785,000	8,686,000	117,000	118,000

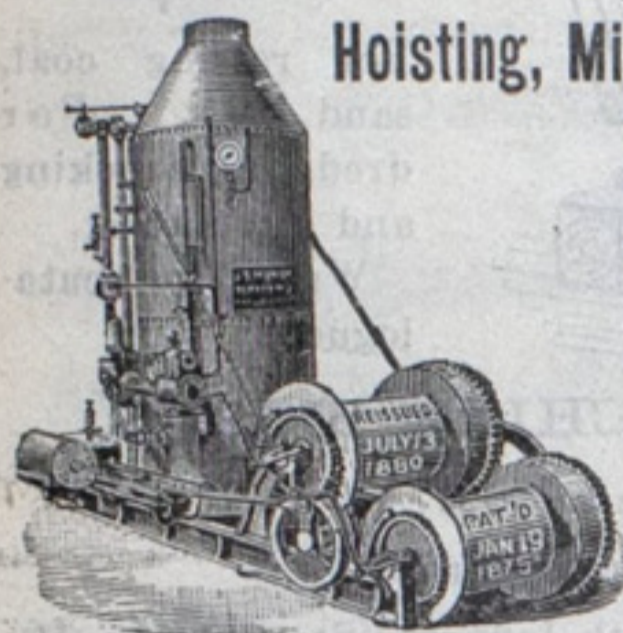


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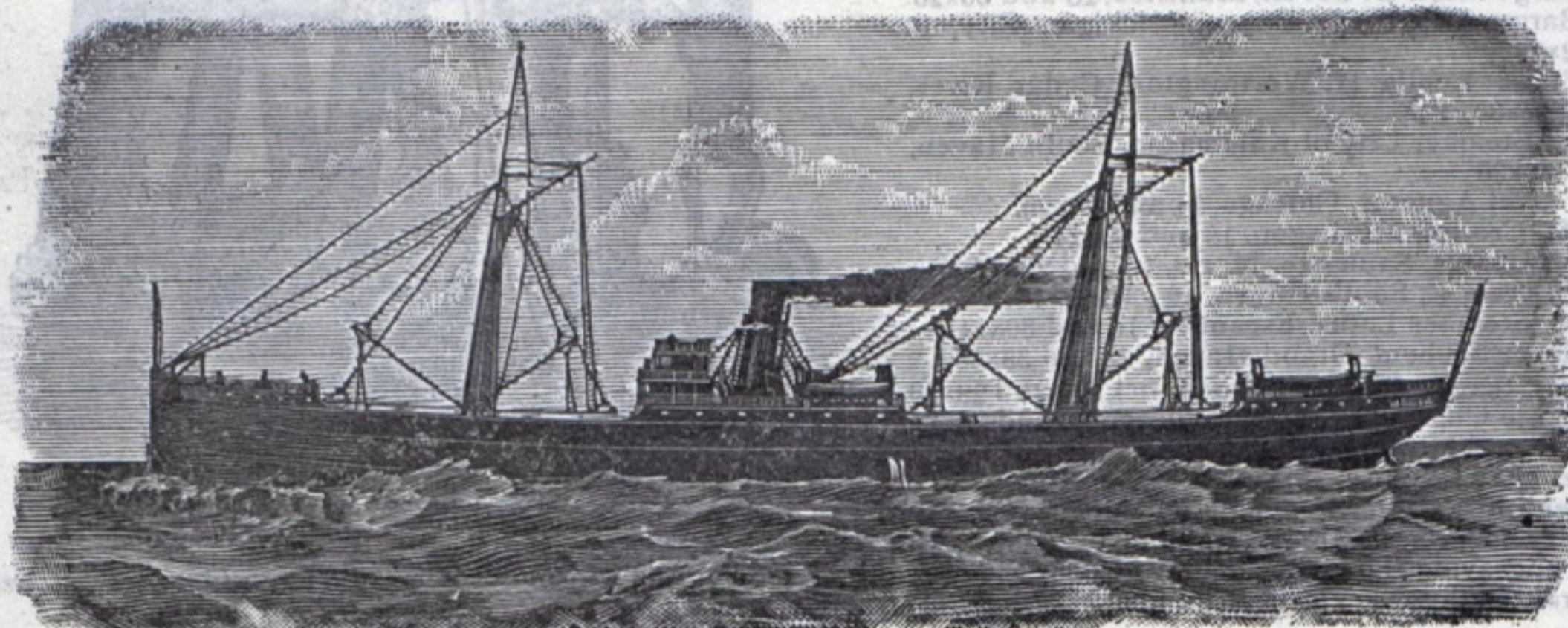
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transferring machines
for depositing cane
from car to carrier, with
my improved Patent
Friction Drums, with
or without Boilers. Any
amount of reference
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249 South Jefferson St., Chicago, Ill.
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85 Front St., Portland, Oregon.
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MARINE ENGINES,
DETROIT, MICH.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, PAID UP IN CASH. \$3,000,000.00.
ASSETS, 9,487,673.53.

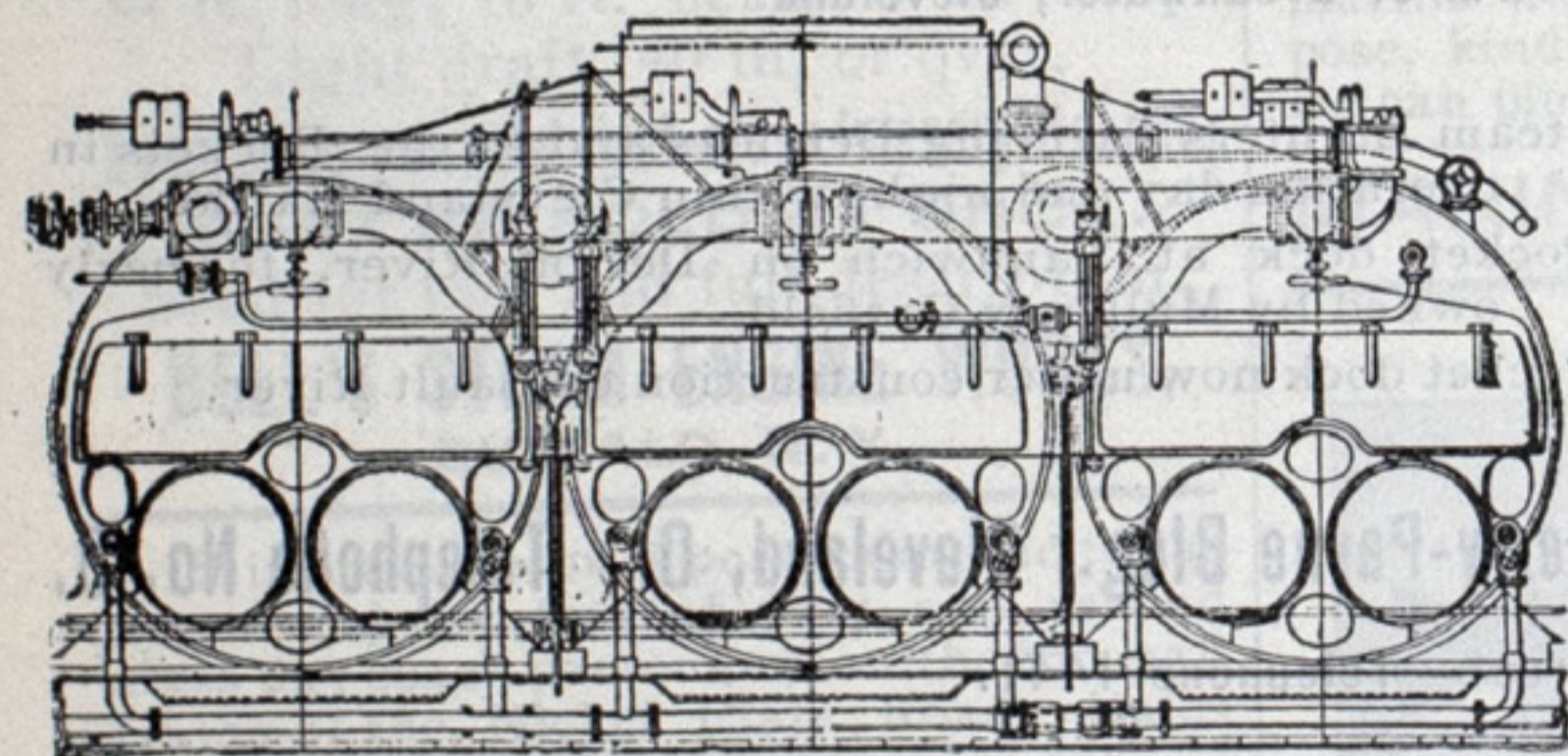
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EUGENE L. ELLISON, 2d Vice President,
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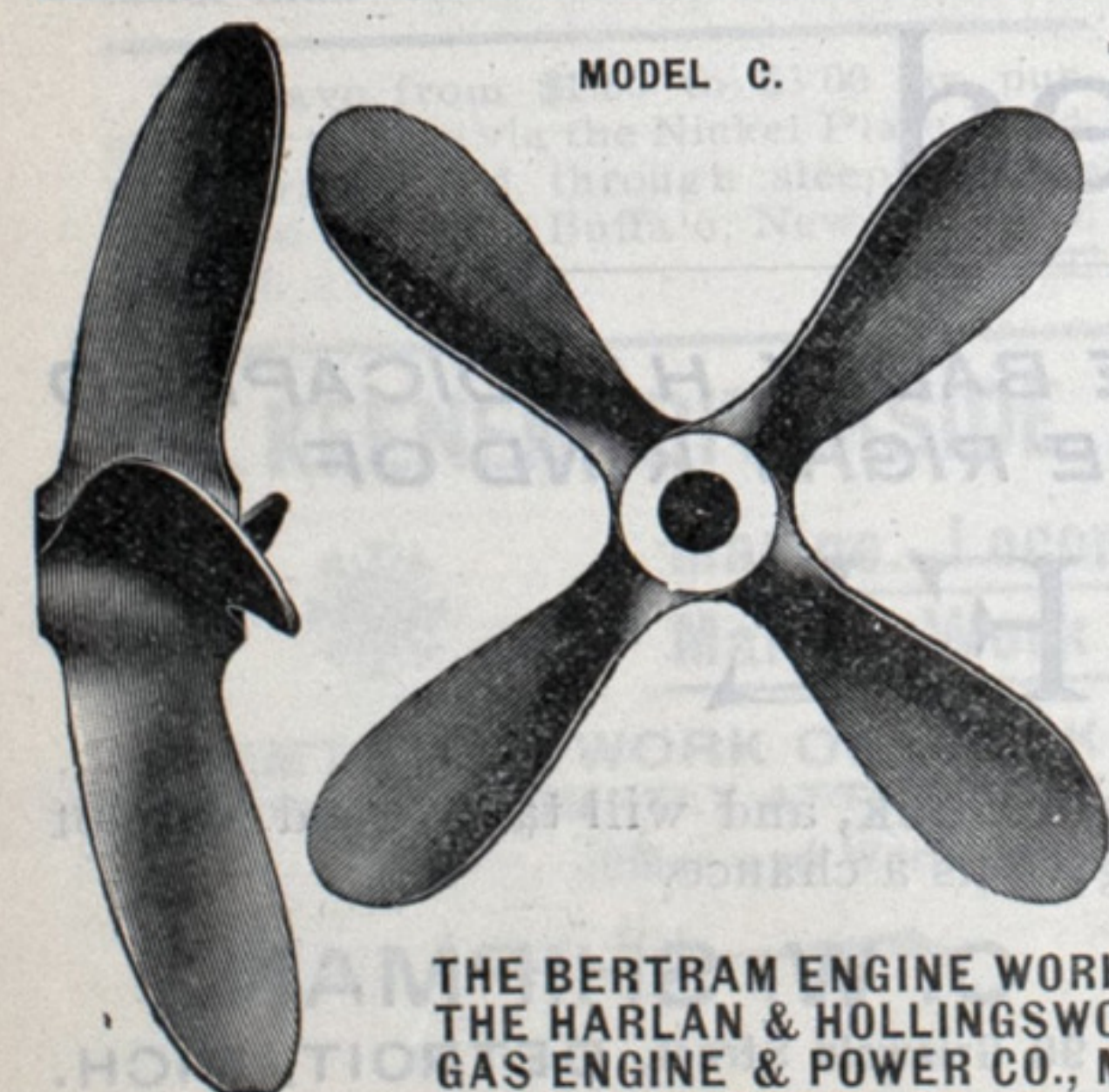
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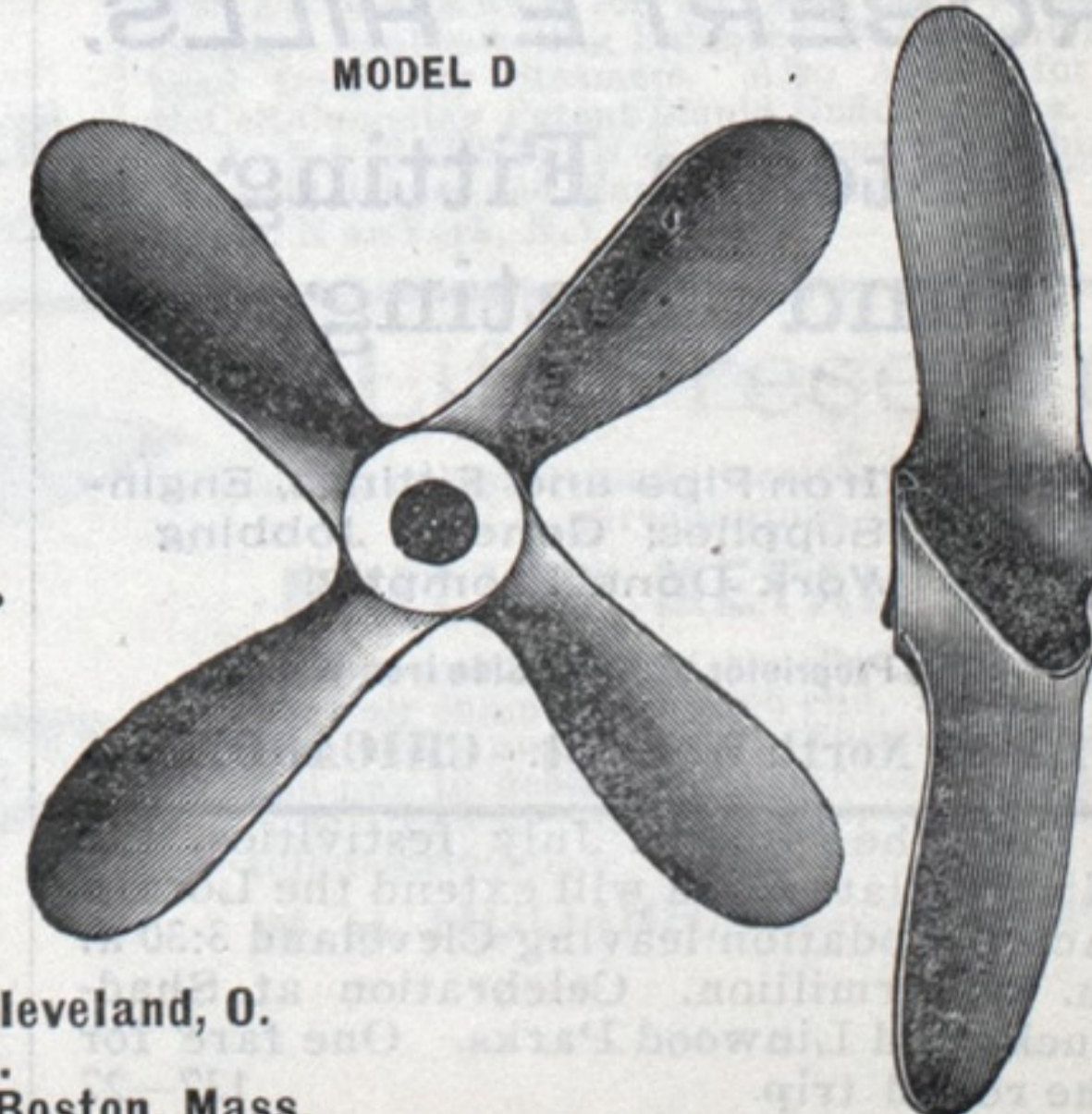
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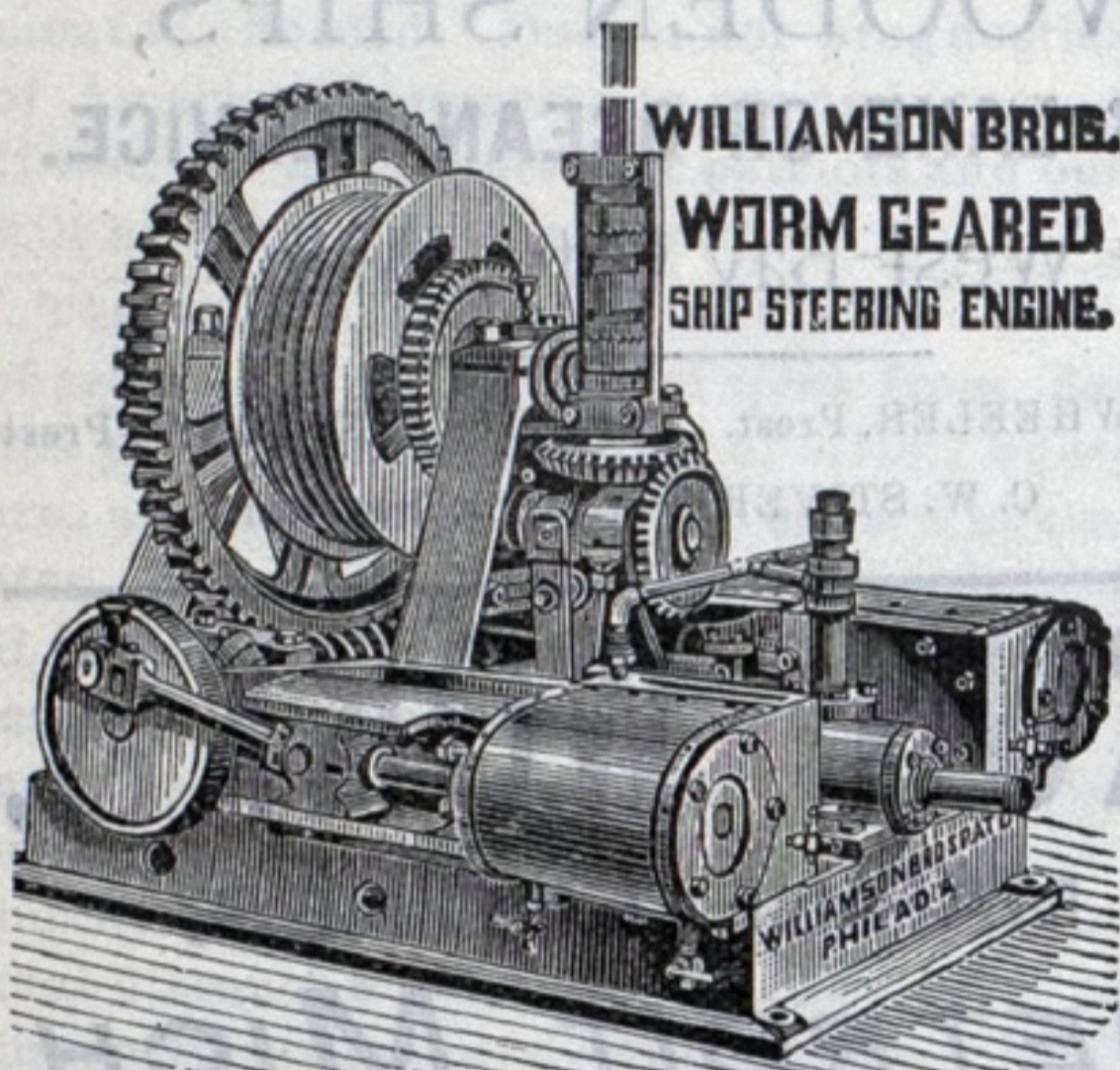
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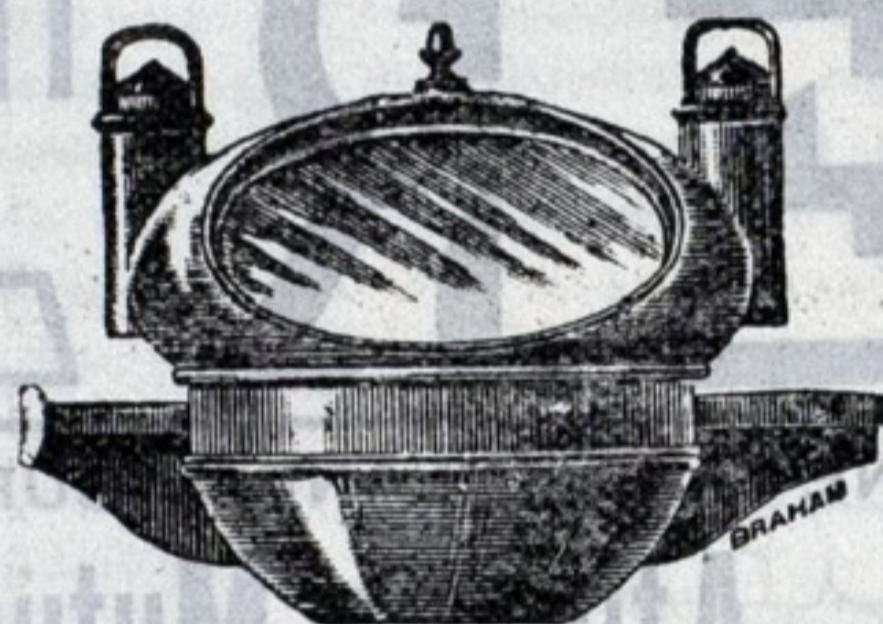
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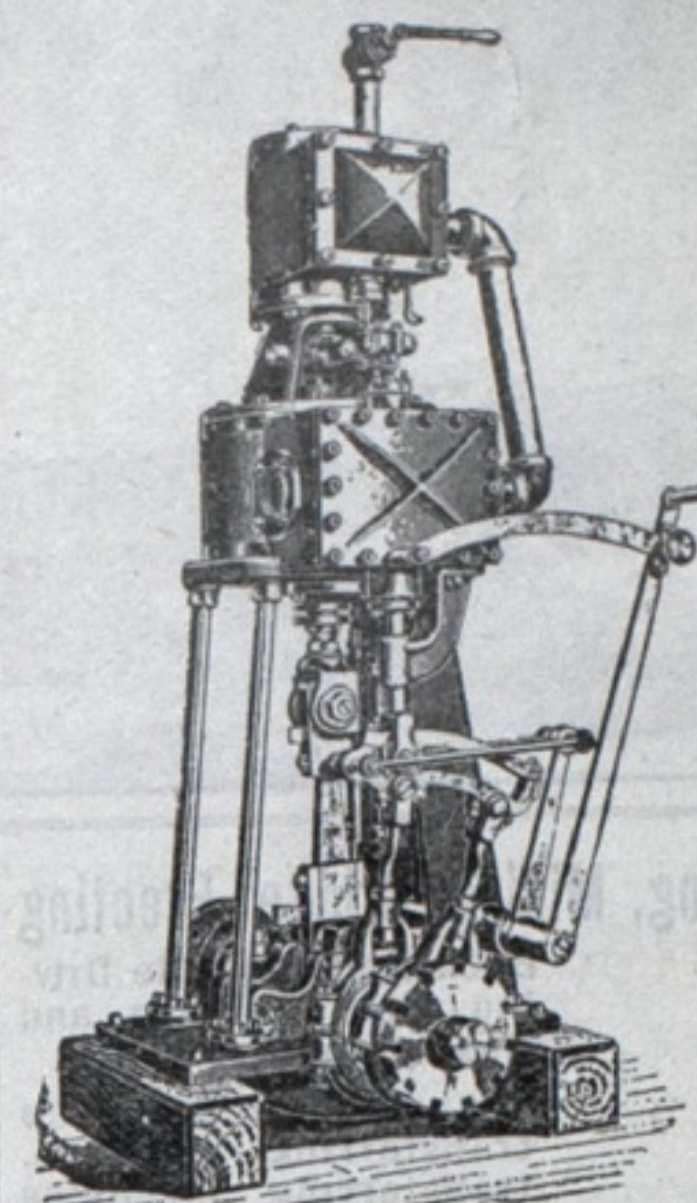
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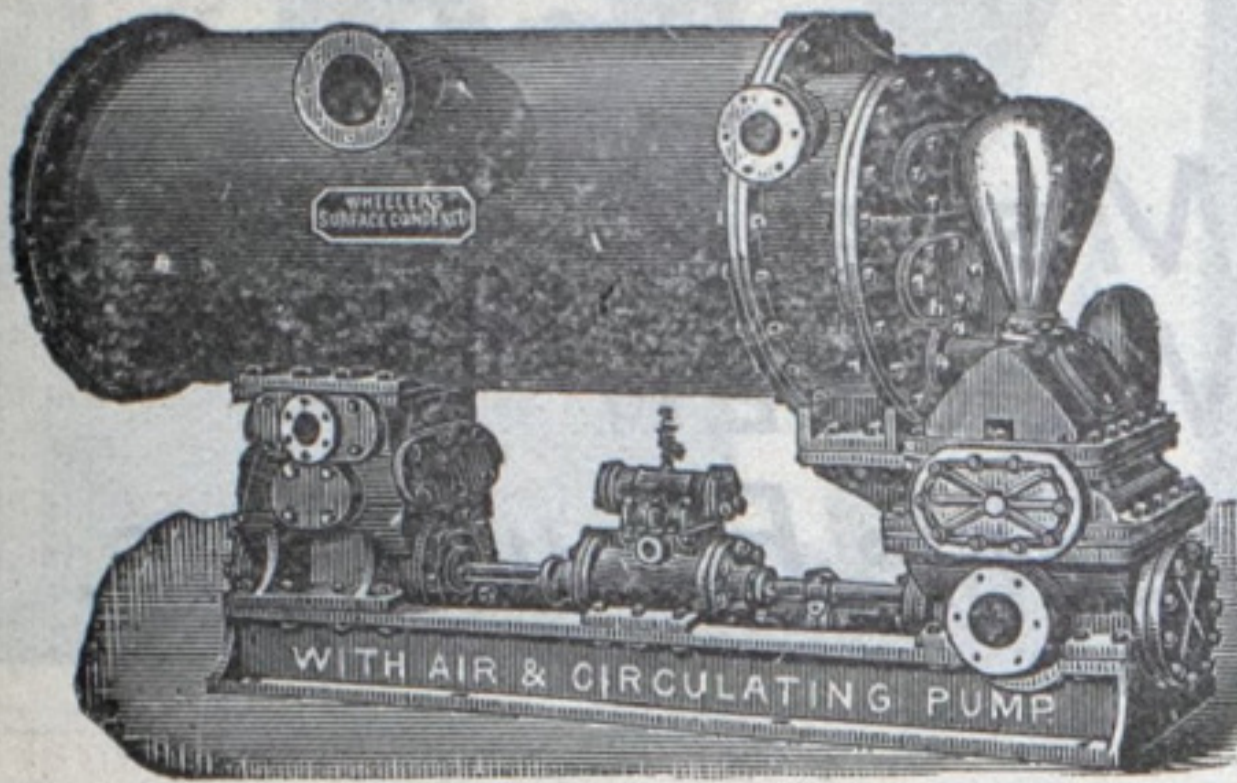
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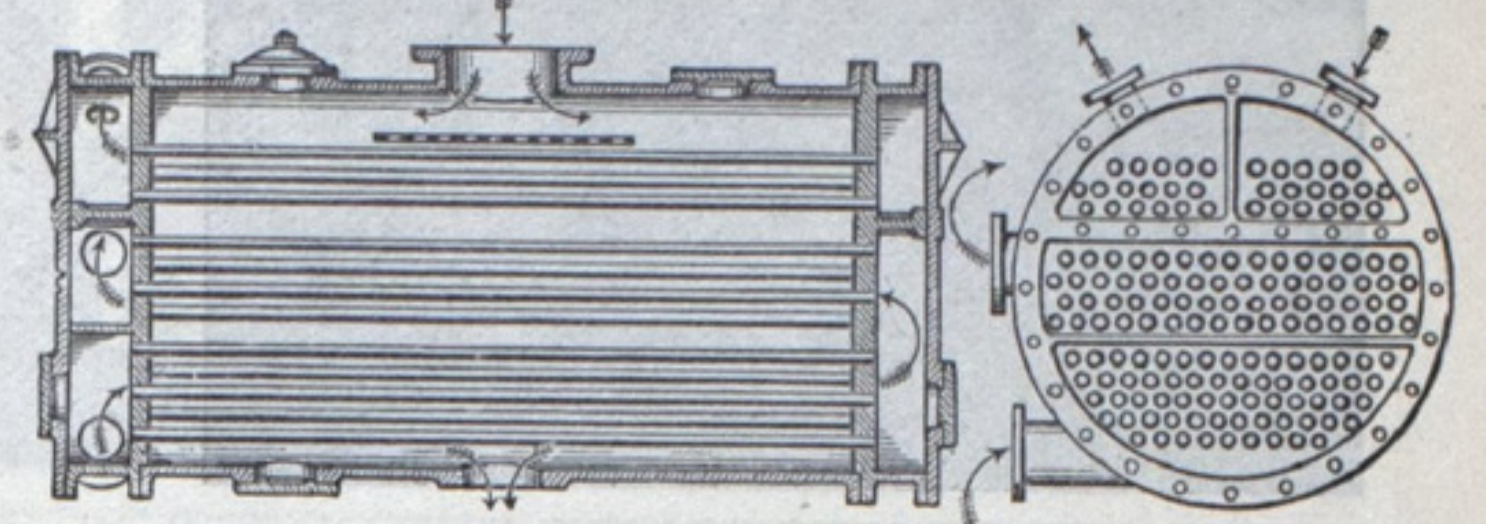
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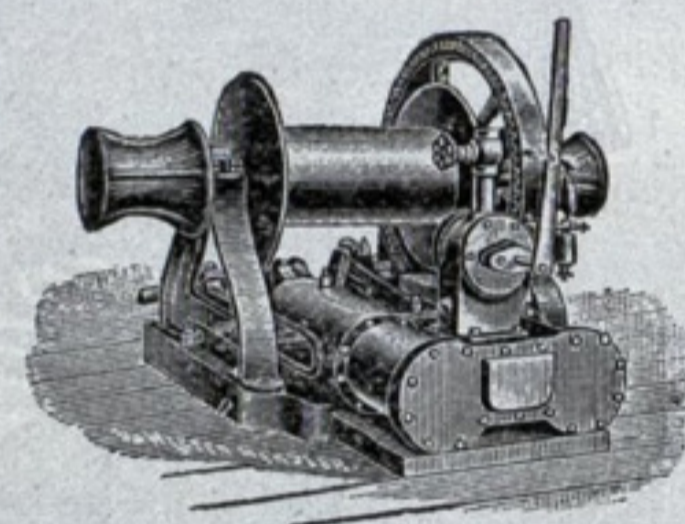
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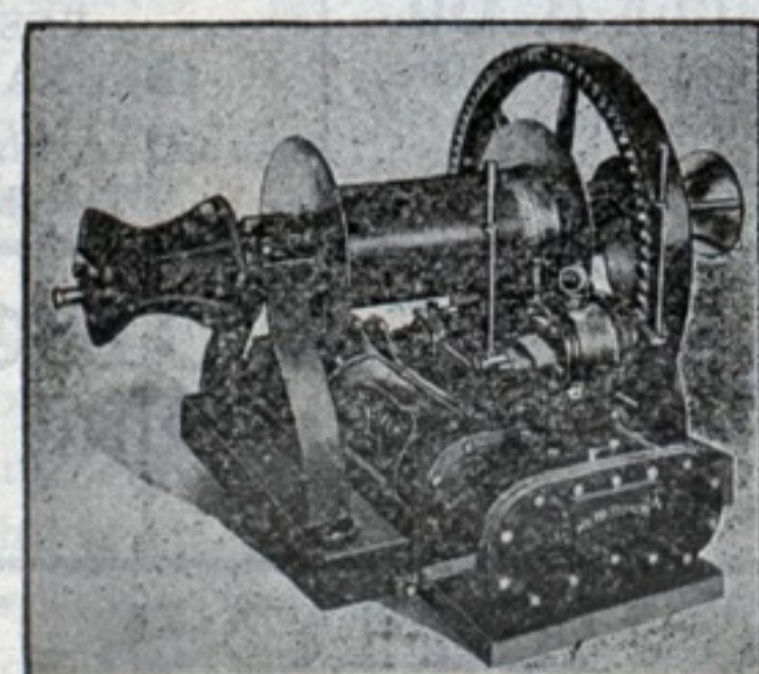
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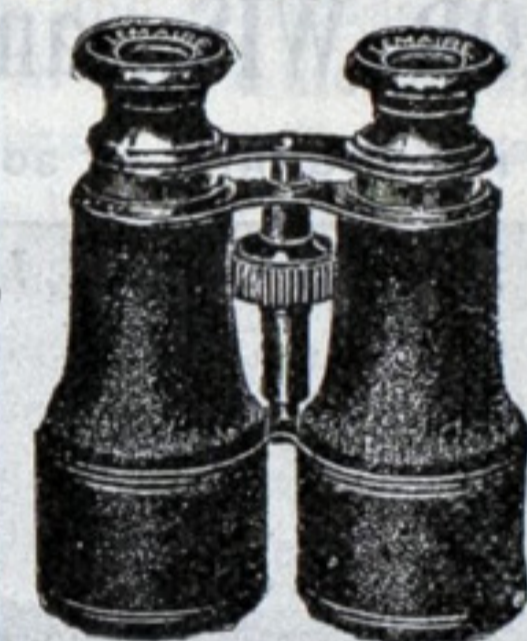


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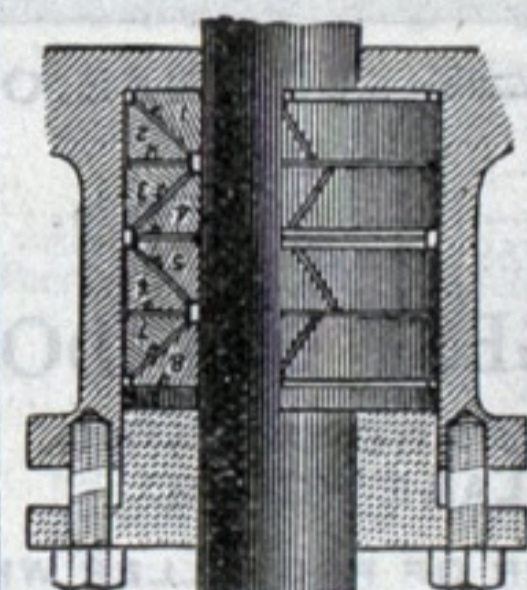
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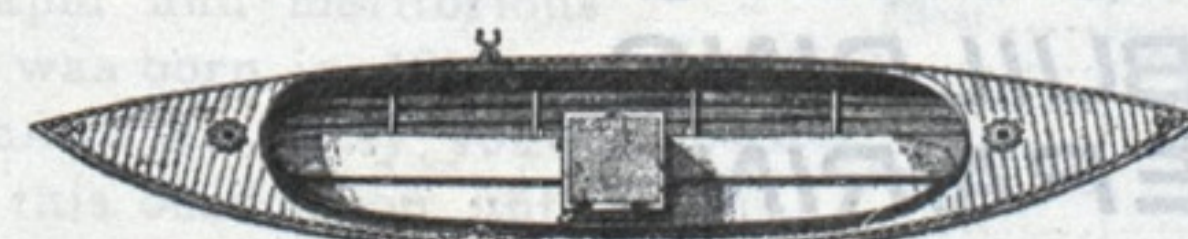
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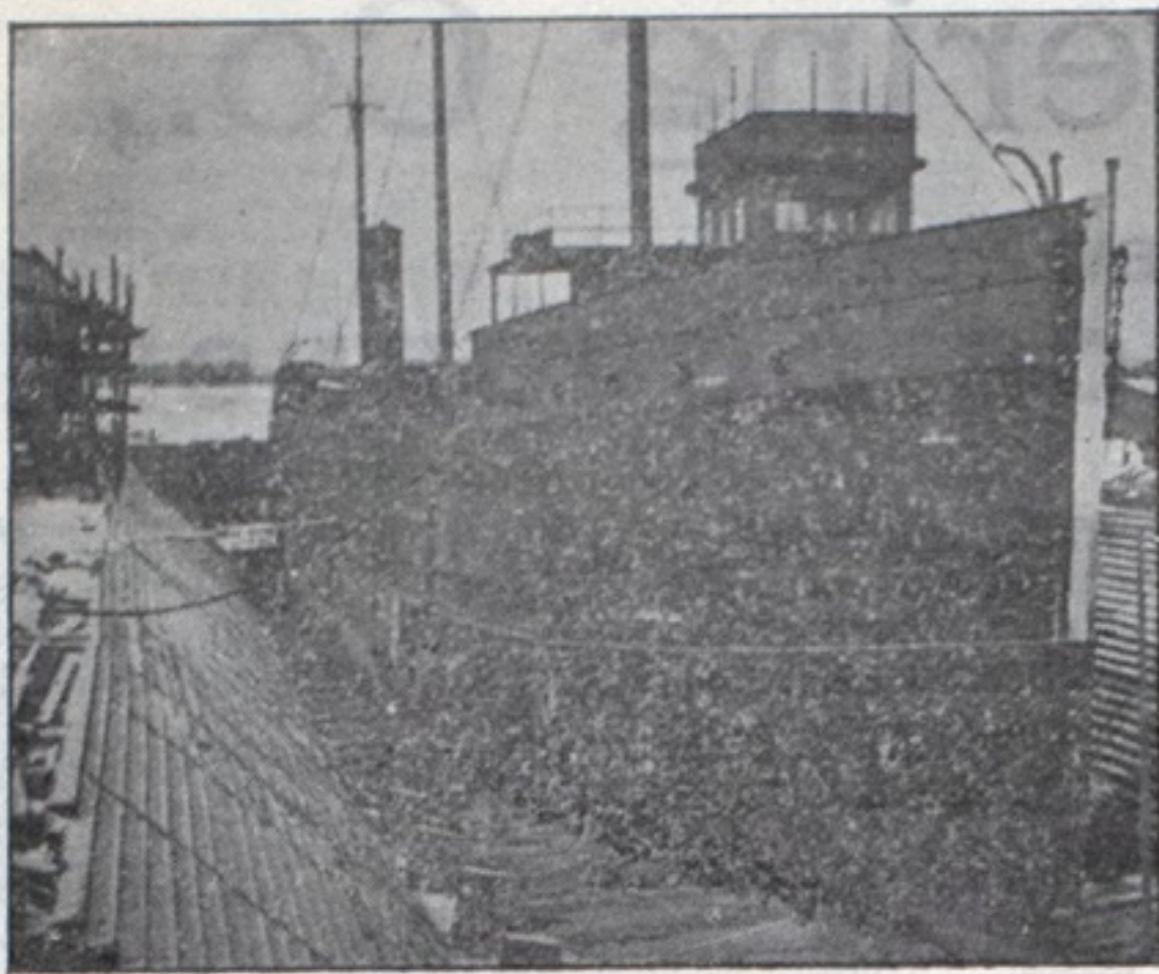
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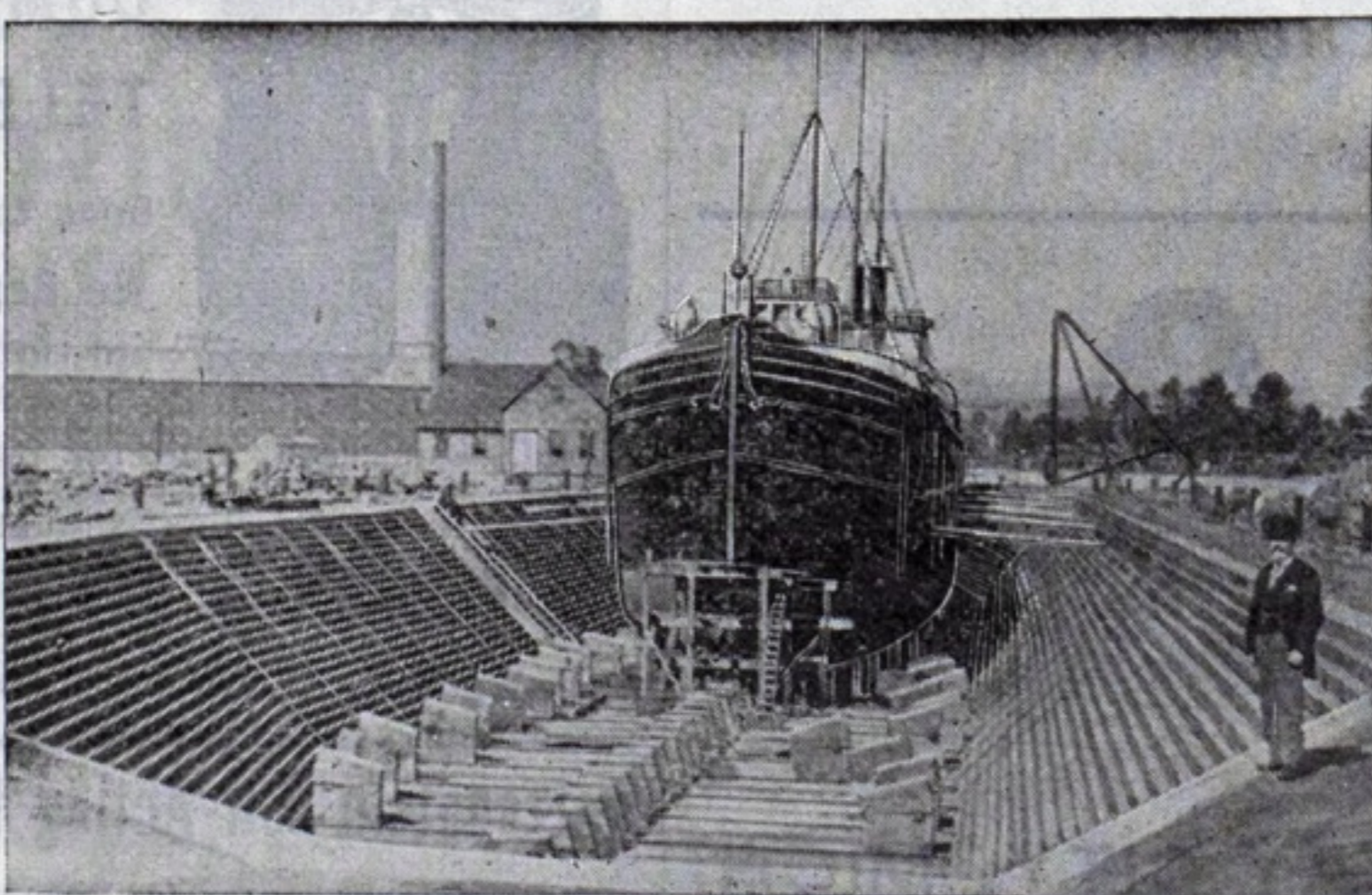
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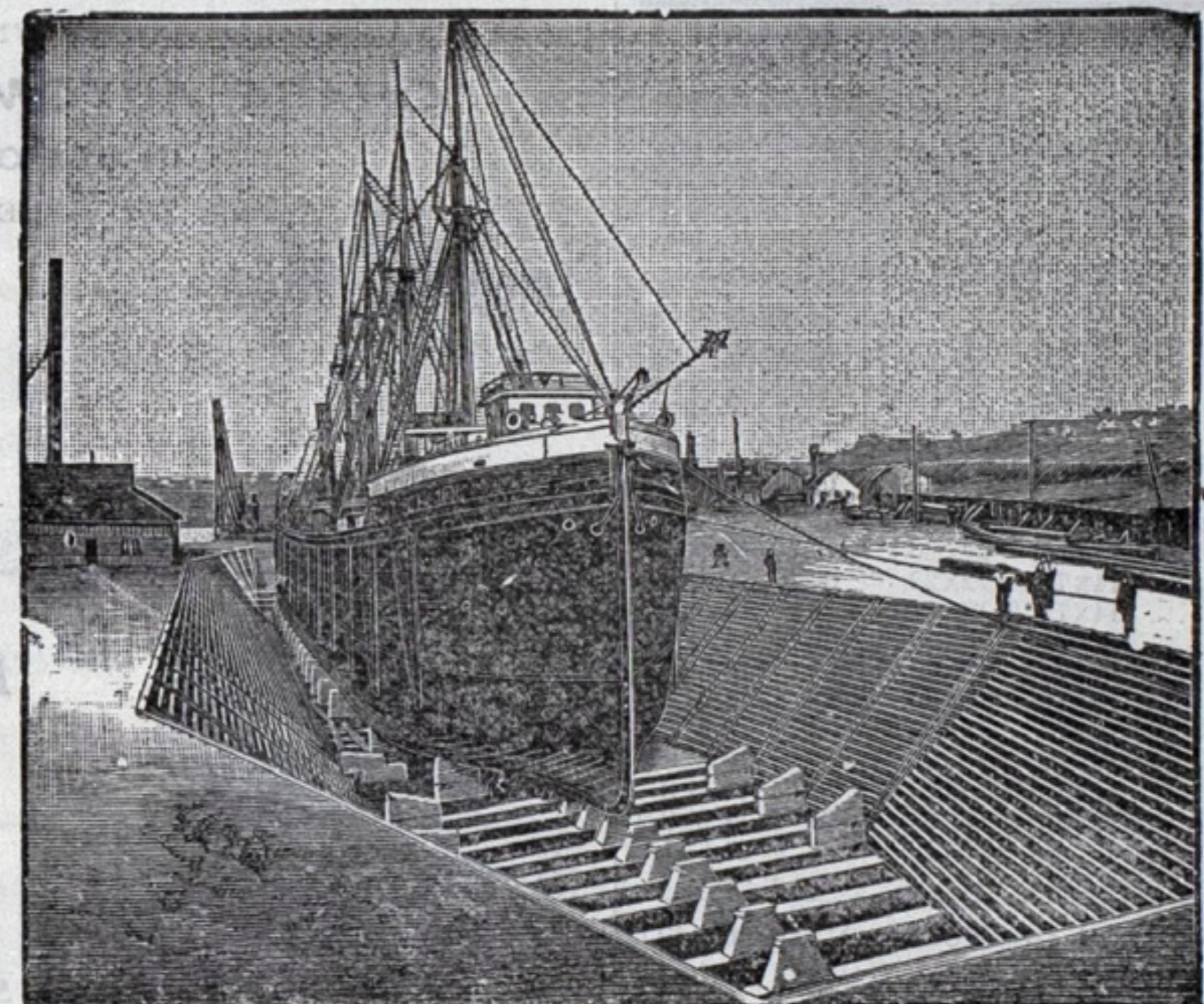
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